

SKILFUL CAR DRIVING



Published in collaboration with the
ROYAL AUTOMOBILE CLUB

Price 3/6 net
(Limp cover edition)

86 3/4
B. A. Mujahid Baluch, D F A (Army),
30-4-1976

Skilful Car Driving

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Printed in Great Britain by Goddards & Cawley Ltd., Hull.

Good Driving is Cornerstone of Road Safety, say RAC

Where road safety is concerned, three things are important according to the RAC, Britain's senior motoring organisation—better highways, more facilities for improved education for all classes of road user and an increase in the use of 'courtesy cops'.

The RAC believes in practising what it preaches and has pioneered driver education in this country for more than half a century.

As long ago as 1902 the Club first gave professional driving instruction—to coachmen making the switch from horses to combustion engines!

When the driving test was instituted in 1935, the RAC set up a register of driving instructors. To qualify, the instructor had to pass a rigorous written and practical examination and until the recent introduction of the Ministry of Transport register, this was the only completely independent assessment of an instructor's abilities. More important still, it was a guarantee to the public.

Although the Ministry examination is to be compulsory for all professional instructors, the RAC Registration is still much prized and the 5,000 holders can truly be regarded as the "cream of their profession".

Soon after World War II, the RAC and the ACU pioneered a training scheme for motor-cyclists. Today, there are 150 training centres throughout the land and

this provides the two-wheeler rider's only opportunity for getting really sound basic training.

In 1959 the RAC launched the "Junior Driver" Scheme designed to provide a full course of driving instruction and traffic education for teenagers. As this book goes to press, more than 400 "Junior Driver" courses have been held in schools, youth clubs and industrial organisations. Most of the drivers trained under this scheme pass their Ministry test first time.

Research in the United States where similar schemes have operated for many years, show that young drivers "traffic educated" at school have far fewer accidents than those not receiving such tuition.

But once a driver has got beyond the test stage, he is left largely to his own devices, his only teacher the hard school of experience. So it is up to every responsible adult driver to try to improve his own standards and this book has an important part to play.

Readers who would like further information on any of the RAC schemes mentioned are asked to write to: The Royal Automobile Club, 83 Pall Mall, London, S.W.1.

Enquiries concerning the Registration of Driving Instructors (and Motor Schools) and the 'Junior Driver' scheme should be addressed to the Technical and Engineering Department, and those concerning the RAC-ACU Training Scheme to the Motor-Cycle Department.

Skilful Car Driving

INTRODUCTION

A skilful car driver is hard to define; he is not one merely free from accidents, for an accident can happen to anyone no matter how careful he is. Skilful driving is founded on competent car control together with accurate estimation of speeds and distances, and intelligent anticipation.

To acquire these qualities needs plenty of practice and experience which can only be gained by driving many miles on the road in all conditions; however, this book will steer you on the right course and maybe help you to drive understandingly rather than experimentally.

Some recommendations given in the book are matters of opinion, but they are all based on wide experience and have full supporting explanations where necessary, and whether you have been driving many years or have only recently passed your test you will find the following pages full of information and well worth reading.



Fig. 1. In a situation similar to the one shown above, what hazards might you expect (there are at least 8). Answers page 61.

PART I — YOU AND YOUR CAR

YOU IN YOUR CAR

When seated in your driving position, you should be comfortable and supported in the right places, otherwise driving can be very tiring.

The illustration (Fig. 2) shows a comfortable position and draws attention to the points to watch. It also shows the method of holding the steering wheel correctly.

You must be able to reach the pedals, gear lever, switches, etc., quite easily without straining. In addition you must have a clear view of the road in all directions. Cars vary considerably in their all-round vision but you should make sure you can see forward without having to strain upwards or peer through the steering wheel. Adjust the mirror so that you can see through the rear window without moving your head.

All new cars must have seat belts. It has been proved that many deaths in car accidents are caused by passengers being thrown out of the car or receiving head injuries due to being thrown about inside the car. The belts must be properly adjusted as given in the appropriate instructions.

Fig. 2. The correct position in the car: clear view of road ahead, legs not cramped or stretched, hands resting easily on steering wheel at 10 mins. to 2 or a quarter to 3 position. Now fasten your seat belt.



YOUR HEALTH

Driving in traffic nowadays needs all your attention. You often have only a fraction of a second to take action to avoid an accident. Therefore:

- (a) *Concentrate* and don't let your attention wander: concentration assists anticipation.
- (b) *Remember*, your reaction time is increased by illness, mental strain, drugs, common cold, alcohol and speed.
- (c) *Make sure* your eyesight and hearing are good and that you are wearing the correct spectacles or hearing aid if required. Without a clear appreciation of the various signals by sight and sound your progress along the road is hazardous indeed.
- ✓(d) *Practise* the mechanics of driving the car until you can do it perfectly without conscious effort. If you are in a car you have not driven before, take things very cautiously for an hour or so until your feet and hands become accustomed to the positions of the pedals and gear lever. These are not always in the same places relative to the seat position, so drive an unfamiliar car slowly until you get used to it.

- (e) *Start early*, giving yourself plenty of time for the journey. Remember the well known saying, "Better to arrive late in this world than early in the next".
- (f) *Have a break*. On a long drive it is a good idea to pull in at one of the lay-bys and get out of the car to stretch your legs after two hours or so. A few minutes spent like this will refresh you considerably.
- (g) *If you feel drowsy* at all, pull in and have a cup of tea and a walk round. This feeling is very difficult to shake off in a car and many people have been known to fall asleep suddenly, waking up a few seconds later to find themselves in a very dangerous situation.
- (h) *Don't retaliate* if you see someone driving badly, as this only doubles the danger. Remember, you can only drive one car at a time.

The effect of alcohol on your driving is to make you feel more confident, but at the same time to slow down your reactions. This has been proved by extensive tests and the Ministry of Transport recommends that if you drink, don't drive!

KEEPING FIT

The physical movement required to drive a car is very little indeed and many car drivers are in danger of becoming unfit.

Walking is perhaps the most valuable exercise of all and a brief walk from house to garage and a few yards from parking your car to the office, although useful, is not quite enough; you should get in some brisk walking at other times. Don't start off with a 20 mile hike and then say how tiring it is, but just walk a little further each day and you will gradually get back to your previous standard of health.

We show here some simple exercises which will improve your shoulder, arm and neck muscles, and also some to improve your tummy muscles—all these get very little exercise in the car. The exercises should be done at home, but obviously those in a sitting position can also be done in the car seat or at your office desk. A book in the Know the Game series entitled "Keeping Fit" gives many more simple exercises that you can do at home which will help to keep you fit whether young or old.

Fig. 3. A few exercises to keep you fit.

TRY THESE IN YOUR CAR—



Let tummy flop.

Retract tummy muscles by muscle contraction—not breathing in. Continue to breathe normally.



Palms on head—press palms on head together hard.



Press shoulders back hard.

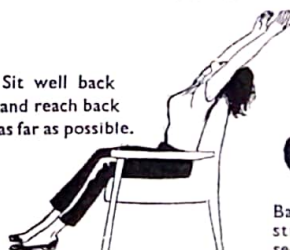


Push palms together. Link hands—pull away.



—AND THEN TRY THESE AT HOME

Sit well back and reach back as far as possible.



Back lying. Alternate leg raising straight. Each leg once—hold for 3 seconds—progress to both legs.

TEST YOUR OWN REACTION TIME

Your reaction time is the time between when you see danger and when the brake is actually applied to slow the car down. This varies with different people and also with your health at any particular time. An interesting test can be done with the help of a friend as follows:-

- (a) Prepare two strong plastic or paper bags each containing 1 lb. of sand or earth and tied up securely. A piece of wood, a ruler or strong narrow board about 2 ins. wide and 18 ins. long. These are held by your passenger in the position shown in Fig. 4.
- (b) You will now need a level stretch of road with little or no traffic about and your passenger sitting in the passenger seat.



Fig. 4. Passenger holding test equipment.

The procedure is as follows:-

- (i) Through the open window the passenger balances one plastic bag on the piece of wood and holds the other in one hand. The bag on the piece of wood can be steadied until the car is in the right position. The driver drives the car along the road, getting up speed to 30 mph, and keeps it at this speed with his foot on the accelerator.
- (ii) Passenger looks behind to make sure there is no following traffic then shouts "stop" and drops one bag at the same time. The driver stops as quickly as possible; as soon as the brakes are applied the second bag will slide off its wooden support and drop to the ground.
- (iii) Driver pulls up, and the distance between the two bags in the road is measured. This represents the driver's reaction time. At 30 mph 44 ft. represents 1 second. Fig. 5 shows a typical stop from 30 mph.



Fig. 5. Your reaction time and braking time shown quite clearly on the road.

Note. As the time element is very important and very short (fractions of a second), the actions must be done perfectly to get a reasonably accurate result. Make sure the first bag is dropped exactly as the word "stop" is shouted and also ensure that the second bag is free to slide off immediately without any friction. It will be found that the 2 bags will be about 10 yds. (paces) apart and the car will probably have stopped about 15 paces farther along the road.

Experiments have proved that the best reaction time which can be expected is $\frac{2}{3}$ second; this means 10 yds. at 30 mph.

The stopping distance is, of course, your reaction time plus the braking time and it is very interesting to see these facts shown so clearly in terms of *distance*. Although you attempt to stop immediately, you have proved to yourself that this is impossible!

SERVICING YOUR CAR

The best way of avoiding a breakdown on the road is to have your car serviced regularly by a competent garage. This also makes the car run more efficiently, gives you more pleasure in driving, and makes the car last longer. The five most important items to keep in good condition are tyres, steering, brakes, lights and wind-screen.

- (a) *Tyres.* These are dealt with in more detail on page 9 but it is important to ensure that they are kept at the correct pressures and replaced when worn.

- (b) *Steering.* Modern cars steer very easily indeed and if there is any excessive movement in the steering wheel or if the steering feels heavy, the car should be put into a garage at once for special attention and examination.

- (c) *Brakes.* The footbrake should stop the car smoothly without any tendency to pull to one side or the other or to lock the wheels. The amount of wear on the brakes depends on the use and the way you drive; the garage will usually tell you when the brake linings need renewing.

The handbrake should stop the car without too much effort and also hold it on a hill against the car's tendency to move backwards. Remember, if your footbrake fails you may have to rely on the handbrake in an emergency so it is a good idea to have it attended to if it is not as efficient as it should be. It is a good idea to test the brakes as soon as you move off, particularly in a strange car, so that you are sure that you can stop as you wish.

- (d) *Lights.* Remember that you are legally bound to ensure that your lights are in working order whether it is daylight or dark. Also check your stop lights and make sure they are working as soon as you put your foot on the brake pedal.

Check from time to time that your trafficators or indicators are working correctly. It is very annoying and sometimes dangerous to find that your indicators are not working when you feel sure you have

been driving correctly. It is also possible for the brake stop lights to be faulty and give the impression of an indicator light.

Before driving off in the dark, walk round the car and see that side, tail and numberplate lamps are allight. You can check that your head lamps are correctly adjusted if you project them on to the wall of your garage (provided the floor is level). The spot of light on the wall should not be higher than the head lamps of your car. If necessary get them adjusted by the garage.

All lamps and your starter depend on the condition of your battery; keep it topped-up with distilled water and renew when inefficient.

- (e) *Windscreen.* Keep the windscreen clean; in wet weather you will find windscreen washers are quite useful. Make sure the windscreen wiper blades are in good condition and flexible. They usually need replacing after 2 to 3 years. When cleaning the windscreen lift the wipers and clean them separately and also remove the grit which usually accumulates underneath the edge.

It will be found that diesel fume deposits accumulate on the front windscreen and this is often difficult to remove without a grease solvent.

Remember to clean the back window too and also see that the mirrors are correctly set. Wing mirrors particularly need cleaning from time to time if they are to remain efficient.

TYRES

The tyre tread is designed to grip well on all types of road surface, both wet and dry, and the walls of the tyres are flexible to ride smoothly over bumps in the road and also to contain the air which is the supporting medium. It is most important to check frequently that the tyres are at the correct pressure, as this affects the steering, the riding and the wear of the tyres.

Always adjust the tyre pressures when the tyres are cold and make sure you check the spare wheel at the same time; the correct pressures are given in your car handbook. For really heavy loads and high speed the pressures can be increased by 4 lb. per square inch but advice is usually given in the car handbook.

Tyres which are *too hard* give a bumpy ride and become worn in the centre of the tread, causing reduced grip on the road.

If tyres are *too soft* they make the car harder to steer and unsafe on corners. When the car is driven fast the tyres overheat due to excessive flexing of the side walls.

Car tyres are of two basic types of construction, each available in tubed or tubeless forms. In the cross-ply tyre (usually fitted) the textile cords are arranged so that they cross each other diagonally. The radial-ply tyre has the textile cords running *around* the tyre and this makes the tyre casing more flexible and reduces the scuffing movement in the tyre when cornering. Because of their different road-holding characteristics it is dangerous to mix cross-ply and radial tyres.

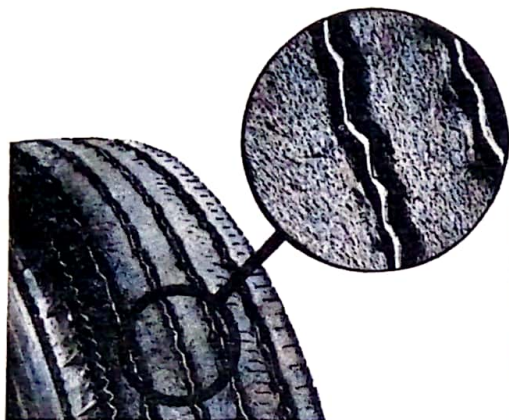


Fig. 6a. Rubbed appearance due to incorrect alignment of front wheels.

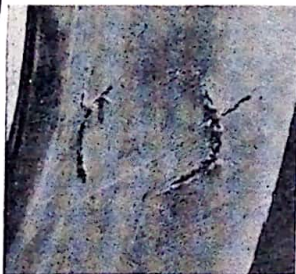


Fig. 6b. Inside appearance of tyre as a result of running over pavement edge.



Fig. 6c. Appearance of tyre run below pressure. A tyre inflated too hard would wear in the centre and leave the edges unworn.

PUNCTURES

Punctures are more likely if the tyres are not looked after and/or are badly worn, but it is possible to have a puncture with brand new tyres if you are unlucky. Therefore always be prepared with the jack and the correct spanner or wheel brace so that you can change a wheel if no garage is available.

The jack provided with the car and the position of the lifting lugs will vary with different types of car but the

general principles are as follows:-

- (a) Move the car off the road or out of the traffic on to reasonably level ground by pushing if necessary. If the car is on a slope or a steep hill it is advisable to get it to level ground before attempting to change the wheel.
- (b) Take out the spare wheel and make sure it is inflated before you take off the other.

(c) Place the jack in the correct position under the car and if possible get a plank of wood, a large, flat stone, or some other support to put under the jack to prevent it sinking into soft earth or warm tar at the side of the road. The larger the area of support the firmer the car will be.

(d) Make sure the handbrake is on very firmly and put chocks front and back of one of the other wheels to make sure the car does not move when raised on the jack.

(e) When the jack is firmly holding the car, undo the wheel nuts before the car is off the ground, then the wheel is still held firmly. (Note that many garages tighten the wheel nuts with long-levered spanners and it is advisable to check that the nuts can be unscrewed with your equipment. A spot of grease or oil underneath each nut will help).

Tubeless tyres. A small hole in the tubeless tyre left after a nail or other object is removed can be repaired by using a special outfit which provides a rubber plug to press tightly into the hole. This should be regarded as a temporary measure only and the repair should be vulcanised by a competent garage mechanic later. If a tubeless tyre loses all its air, the edges will become unseated from the wheel rim and the tyre cannot then be inflated. A garage has special equipment for tackling this.

Tubed tyres. The repair of a puncture in a tyre with a tube is not the sort of thing to tackle by the roadside and the tyre should be taken to a garage.

Careful driving can almost double the life of your tyres and if you wish to get the best out of them note the following points:-

✓(a) Avoid violent acceleration and severe braking.

→(b) Reduce speed before corners.

(c) Don't run over the kerb edge or along close to the kerb edge when parking. (see Fig. 6(b)).

✓(d) Keep the tyres at the correct pressure, checking them every week.

✓(e) Make sure the steering is correctly aligned.

✓(f) Every month or so examine the tyres carefully for cuts in the tyre walls caused by scraping the kerb and, using a small screwdriver, pick out any bits of glass or flint which may be found embedded in the tread.

→(g) About every 3,000 miles change the wheels round so that all the tyres share the wear evenly. Fig. 6d shows two ways of doing this.

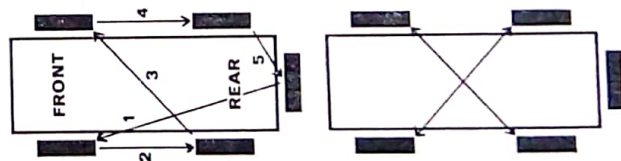


Fig. 6d. Two alternative ways of changing wheels around.

AT THE PETROL STATION

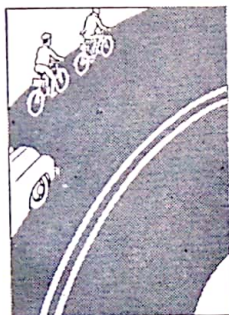
- (a) Drive in so that your filler cap is next to the pump you require.
- (b) Leave enough space for the attendant to walk between the pumps and your car to avoid scratching the paintwork.
- ✓ (c) In rainy weather choose a petrol station with a covered pump position to avoid getting water in the petrol.
- ➔ (d) Ask the attendant to check the oil level.
- (e) Take the opportunity of wiping the windscreen and the mirrors if the attendant does not offer to do this.
- (f) Have you checked your tyre pressures this week? If not, now is the opportunity.



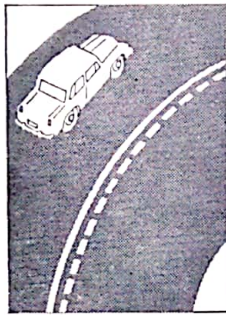
Fig. 7. Correct positioning at the pump.

Experiment with different grades of petrol and different types to find out which runs your car most efficiently at the most reasonable price. There is no point in buying "high octane" or supergrade if your car is earlier than about 1960. The higher grades of petrol are intended for high compression engines. Your car handbook will give you the compression of your car and you can then choose a petrol accordingly.

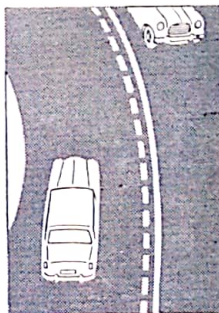
PART 2 — THE ROAD



Do not cross.



Do not cross.



You may cross only
if you can see it is safe.

Fig. 8a. Double line markings in middle of road.



Fig. 8b. Line marking edge of road.

MARKINGS ALONG THE ROAD

The centre of the road is usually indicated by a broken white line, and on approach to a crossing or curve or other hazard in the road this may be a double line.

This double line may be continuous or one line may be continuous and the other broken. If the line nearer to you is continuous keep to your own side of it and do not cross or straddle it. If the line nearer to you is broken you may cross it but only if you can see that it is safe to do so and that you can complete your overtaking before reaching a continuous white line on your side.

Sometimes the edge of the road is indicated by an open spaced broken line or alternatively a very closely spaced broken line at "Give Way" junctions and often the road is additionally divided into "lanes" by widely spaced broken white lines. You should keep within the lane and even if lanes are not marked on the road it is a good idea to develop a feeling of driving in a lane along the road so that you do not wander from side to side and endanger other traffic.

MARKINGS ACROSS THE ROAD

Transverse markings on the road are put there to show you where to stop or where to proceed cautiously. There are *five* important markings across the road, together with their associated signs, which you must know and take notice of; four are shown on these pages whilst pedestrian crossings are on pages 16 and 17.

Fig. 9. Transverse double solid white lines. You must stop here after a stop sign.



Fig. 10. Transverse single solid white line (stop line). You must stop here when required by police or light signals. Do not over-run this line: sometimes it is placed a short distance from the crossing to allow room for vehicles turning out of or into a narrow road entrance.



Fig. 11. Transverse double broken white lines. You must proceed with caution after a "Give Way" sign and may have to stop to avoid inconveniencing traffic in the road you are entering.



Fig. 12. Transverse single broken line indicating the edge of the other road and that you should give way.



PEDESTRIAN CROSSINGS

You should always approach pedestrian crossings at such a speed that you can stop if necessary.

If pedestrians are actually on the crossing they have the right of way and you are bound by law to stop. If there are pedestrians standing on the pavement waiting to cross, you are not obliged to stop, but it is courteous to do so if circumstances are suitable. For example, if you can see that you are at the end of a string of traffic, keep going. If you see that the traffic is more or less continuous and there are a lot of people waiting, slow down well in advance so as to open up a gap between you and the car in front; this will indicate to the pedestrians that you are intending to stop, but give a hand signal so that no other car overtakes under the impression that you are pulling to the side of the road.

Never overtake another vehicle which has stopped at a pedestrian crossing or when it is approaching a crossing, as your restricted vision may result in an accident.

If you are turning at a traffic light remember that pedestrians will be crossing there after having waited for the light to change, so give them right of way. Even though the traffic signal is at green this does not entitle you to run people down; it means that you may proceed *provided only that it is safe to do so*.

It is an offence to park near a pedestrian crossing within the studs marked on the road on the approach side of the crossing.



Fig. 13. The sign shown above indicates the entry into an area where traffic lights control pedestrian crossings.

There have been many experiments with traffic lights adapted for pedestrian crossings. Drive cautiously if you see a flashing amber light, or a white cross in place of the normal green light, as these may be pedestrian operated.

Fig. 14. If pedestrians are actually on the crossing they have the right of way, and you are bound by law to stop. If there are pedestrians standing on the pavement waiting to cross you are not obliged to stop but it is courteous to do so if conditions allow.



Fig. 15. Never overtake another vehicle which has stopped at a pedestrian crossing or when it is approaching a crossing, as your restricted vision may endanger the lives of pedestrians.





Fig. 16. 'Box' markings. Look ahead at traffic movement and do not enter crossing unless you are sure you will not be left on the diagonal markings when the lights change - this is an offence.

TRAFFIC LIGHTS

When approaching traffic lights you should be travelling at a speed at which it would be possible to stop when quite close to the lights.

Fig. 17 shows the sequence of the light change which you should already know. Notice that when red and amber are showing together the word 'stop' still appears on the light and this means stop; you should not start on red/amber. If you are moving towards lights at stop and they change to red/amber do not be tempted to speed through but slow down and make sure you do not cross until the light changes to green; the other crossing traffic is legally permitted to proceed on amber but only if it has passed the stop line when the amber appears, or is so close to it that to stop would cause an accident.

If a distant traffic light shows green you should slow down gradually on the assumption that it may change to red by the time you get to the crossing.

Although the sequence of light change is standard, the timing may be set differently to fit a particular situation. Sometimes red is showing in all directions simultaneously to give time for traffic which may be waiting in the centre of the road to turn right. Also a light-controlled crossing may have a minor road entering with no lights and in this case the lights on the other roads would remain at red to allow this traffic to move out.

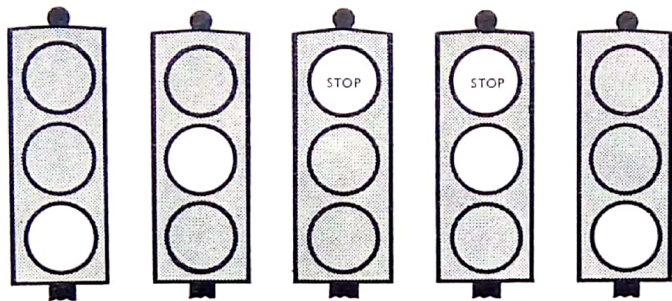


Fig. 17. Traffic light sequence.

When approaching a light-controlled crossing look well ahead so that you have time to get into your correct lane if the traffic lights have a filter signal to the left or to the right; or to give you time to get into the left-hand lane if it appears that a number of cars wish to turn to the right. If you do get into the wrong lane by mistake, for example in the right-hand lane and you wish to go straight on and you are held up by cars turning right, you must wait until the crossing clears and you have a free passage. By using your mirror you can see whether there is any traffic on the inner lane and if clear you can turn out and proceed. In the same way, if you get into a left-hand lane indicated as a filter lane and you wish to go straight ahead, you must turn to the left and pick up your route later on; this is to avoid blocking traffic wishing to turn left.



Fig. 18. Does the One-Way sign shown above mean that you must go straight ahead at the crossing? Answer on page 61.

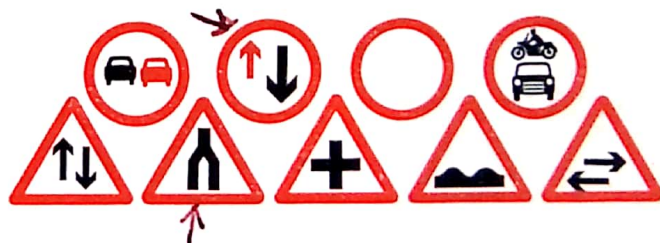


Fig. 19. Do you know the meaning of the signs shown above? Answers on page 61.

WHERE TO PARK

Legally speaking it is an offence to leave your car anywhere on the road except in a line of traffic temporarily stopped or at a place indicated as a parking place. You can be charged with 'obstruction' even though your car need not have caused any annoyance to other road users; the fact that your car is occupying a piece of road means that someone else cannot use it, and this could be legally classed as obstruction.

You should never stop your car in a place where it will cause annoyance or inconvenience to other road users or householders. Many of the more obvious places are detailed in the Highway Code and these include such places as: on the brow of a hill; near a hump bridge; on a bend or corner; on a narrow road; opposite or near to a road junction; across a private house entrance; within a white line; within a certain distance of a pedestrian crossing, etc.

Places where parking is provided are indicated by the sign shown in Fig. 20(a). There may be a time limit or a small charge but this will be indicated on the adjoining notices.

→ Parking meters are installed in many busy places and these allow you to leave your car on the part of the road marked out, for a certain fee which is indicated on the meter itself. The period during which the meter is operative is also given. In a meter zone it is illegal to park anywhere else except at a meter and the area is clearly indicated by the sign shown in Fig. 20(b).

20

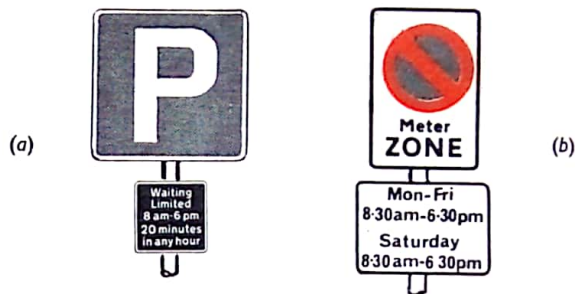


Fig. 20. Signs indicating parking allowed.

PARKING RESTRICTED

Note that you are not allowed to park in a meter zone except at parking places even when the parking meters are not in force.

Certain roads are marked with other signs as shown here:

- (a) *No stopping.* On a motorway you are not allowed to stop on the road for any reason at all. If you have a breakdown pull off the road on to the hard shoulder.
- (b) *Clearway.* Many roads are indicated with a clearway sign which means no stopping at all, Fig. 21(a).

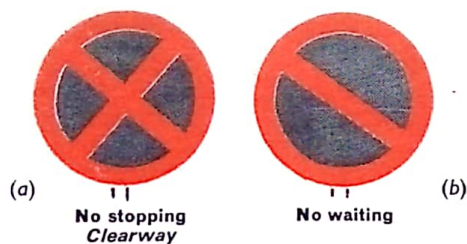


Fig. 21. Signs indicating parking restricted.

- (c) *No parking or unloading.* Certain roads have this sign (shown in Fig. 22b) together with a yellow line marking on the kerb edge or road edge and the time of limited stopping is indicated by signs on nearby posts.

OTHER PARKING HINTS

Avoid parking opposite another parked car and thus reducing the width of the road excessively.

→ At night always park on the left-hand side of the road with your car facing in the correct direction and then the red reflectors at the back of your car will warn

oncoming traffic of your position even if your rear lights are out.

When parking head to tail make sure you leave sufficient space front and rear for other cars to move away in your absence.

When parking side by side do not park too close to another car and thus prevent the owner from opening his door.

→ At night, lights are required on a parked car unless local byelaws allow parking without lights. One white light forward and a red rear light are sufficient, but they must be at least 15 ins. above ground level and are allowed only if:

- The left or nearside of the car is as close as possible to, and parallel with, the kerb.
- No part of the car is more than 100 yds. from a street lamp (lit or not).
- No part of the car is within 15 yds. of a road junction.

When stopped at the roadside, before opening your offside door, look in the mirror and over your right shoulder to make sure there is no passing traffic, particularly cyclists. Passengers should do the same on their side so as to avoid inconvenience to pedestrians on the pavement.

Always lock your door and your boot when you leave your car and see that the windows are closed and locked. Also place any valuables out of sight.

PART 3 — CAR MANOEUVRING

PARKING BETWEEN TWO CARS

Parking between two cars at the kerb side is a manoeuvre which has to be done frequently in town and needs much practice. Always *reverse* into the space, never run in. This is because the front wheels can be turned to move the front of the car sideways but you cannot do this with the rear of the car.

You should be able to get into a space about 4 ft. longer than your car and Fig. 22 shows the method of operation. Never rely on the mirror; always turn round in your seat so that you have a good view behind. If your tyres are below pressure you will find that the steering is heavy and parking more difficult.

Proceed as follows:

- Drive past the space to a position alongside the next parked car about 18 ins. from it.
- Reverse slowly and turn the steering wheel to the left until the kerbside wing of the car parked at the rear appears approximately in the centre of your rear window (this sighting position varies slightly with different cars and can be found as explained on page 24).
- As soon as this angle is reached straighten the wheels and move backwards in a straight line until the front of your car clears the rear of the car in front, then

turn the steering wheel full lock to the right and continue moving slowly backwards. The rear of your car will now be almost against the car behind with its nearside rear wheel about 6 ins. from the kerb. If necessary turn the steering wheel to the left again and run forward a little to bring the car parallel with the kerb.

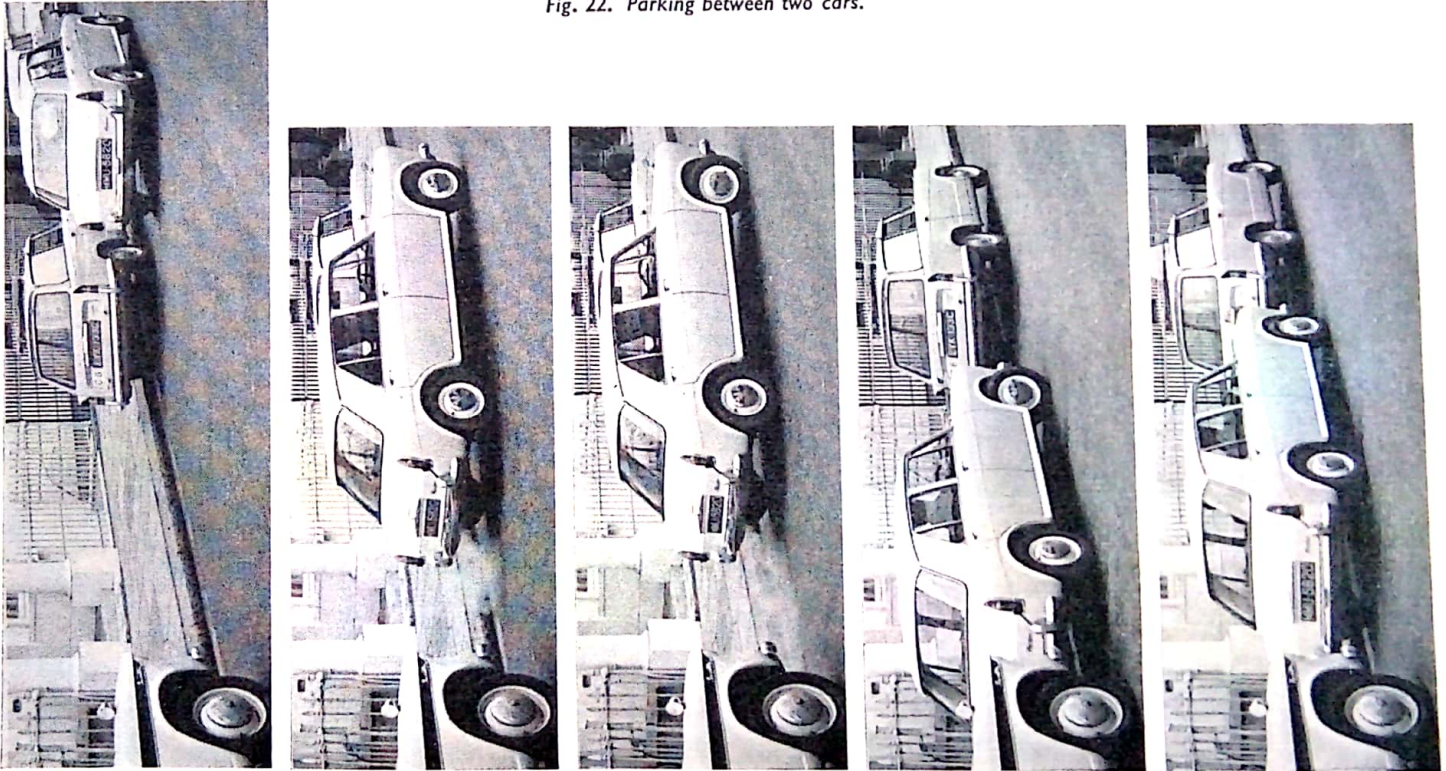
- Leave equal space at front and rear of your car to allow others to move out.

If too close to kerb

If you get in a position where both tyres are pressed close against the kerb you may have difficulty in getting out. Proceed as follows:

- With the wheels straight, move backwards as far as possible.
- Pull on the steering wheel as hard as you can to turn the wheel outwards and move forward very slowly until half way to the car in front; quickly turn the wheels towards the kerb again and run forward as far as possible.
- Turn the wheels parallel with the kerb and move slowly backwards as far as possible. You will now be a few inches from the kerb and you can repeat the operation until you have sufficient room to get out.

Fig. 22. Parking between two cars.



PRACTISING PARKING

If you feel that a little practice would help, you could make up three brooms on stands as shown in Fig. 23. You can then practise on your own and the car will not be damaged if you make a mistake. The brooms are placed to represent the front of one parked car and the rear of another. Alternatively, if you find two friends with cars to help you, you could then take it in turns to practise and observe the others' mistakes.

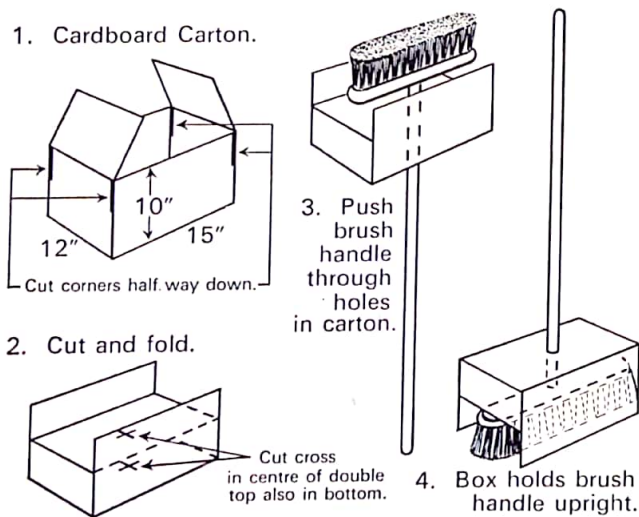


Fig. 23. How to make a simple indicator to help you practise parking.

The procedure is as follows:

- (a) Place your car at the kerb edge about 6 ins. from it and parallel with it, then mark a space front and rear equal to about $1\frac{1}{2}$ times the length of your car, using either the brooms or the other cars.
- (b) Reverse your car until it almost touches the car behind.
- (c) Turn the steering wheel fully to the right and move forward until your front nearside mudguard is level with the offside rear of the car in front. Halt in this position and look through your rear window and get a sighting point on to the nearside front of the car behind you. This is the aiming point to remember when you are reversing.
- (d) Turn the steering wheel to its central position and drive forward in a straight line until the rear of your car is approximately level with the outside line of the parked cars.
- (e) Turn the steering wheel fully to the left and move forward until you are parallel with the forward parked car.
- (f) This position is your starting position. Now reverse the procedure taking note of your sighting line as explained in para. (c) and see if you can get the car back parallel with the kerb in its original position.

This operation should be practised a number of times until you find it quite easy to do: you will find the time spent on this very well worthwhile.

REVERSING

Reversing is not an easy manoeuvre and it is often neglected by otherwise competent drivers. It needs very good clutch control, particularly if done on a slope, and a great deal of careful practice is needed to develop the necessary judgement to reverse with confidence.

If you keep your car in a garage you will have to reverse either in or out, but the other almost essential need is for accurate reversing when parking; this is described in detail on page 22.

Remember the following points:

- (a) Before moving always make sure that there is no obstruction or anyone behind the car.



Fig. 24. Turn your shoulders fully to see more clearly behind.

- (b) Turn round in your seat to look easily over your shoulder at one side or the other, as shown in Fig. 24, otherwise you cannot control the car efficiently.
- (c) Always move slowly in reverse. The effect of turning the steering wheel is much more sudden than it is when moving forwards, so it is very easy for the car to get out of control.
- (d) Control the movement of the car by releasing or depressing the clutch pedal, having fixed your right foot with the accelerator pedal pressed slightly down with the engine running fairly fast; it is difficult to control both the clutch and the accelerator pedal when your body is twisted round.
- (e) If you are reversing into a very narrow opening or up a narrow road you will have to look from one side to the other a number of times to check the clearance and direction and make sure the car is running in a line to keep clear at both sides.
- (f) A slight turn of the steering wheel to change the direction of the car moves the front of the car quite a distance sideways, so you must keep glancing at the front of the car as well so that you do not run the side of the car into passing traffic or any other obstruction.
- (g) Never reverse into a main road.
- (h) Using the two stands with broom handles (shown in the sketch on page 24), positioned about a foot wider than the width of the car, practise reversing between them from different angles. This will allow you to make mistakes without damaging the car.

NARROW SPACE DRIVING

Here are a few tests which will enable you to find out whether you really know the width and length of your car.

- (a) Select a mark on the pavement and pull up so that your front bumper is in line with it. You should aim to be about 6-12 ins. from the kerb edge. Get out of the car and see how far off you are.
- (b) Now drive forward 2 or 3 car lengths and then reverse, stopping your car with your rear bumper in line with the same mark. Get out and see how far off you are.
- (c) Do you know the width of your car? Very often you see the driver of a car in front hesitating about going through a gap which you can see gives him plenty of room. Can you assess your own car width exactly? If you make up the brush handles stand as explained in Fig. 23 and stand them the width of your car apart, view this from 2 or 3 car lengths away and you will be surprised how narrow the gap is.
- (d) Now move the brush handles until they are about 2 ft. wider than your car and drive through it. Gradually move them closer together. If you are a good driver you should be able to go between them quite easily when they are a foot wider than your car.
- (e) Now put them at 45° to the direction in which you are travelling and about 2 ft. 6 ins. wider than the car and practise driving between these.

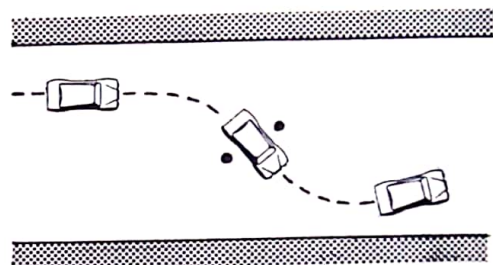


Fig. 25. Arrangement for practising.

- (f) You should be able to judge the distance you are from the kerb to within 3 ins or so. To run the tyres up the kerb edge or along it is very damaging to the tyres and bad practice. In addition, if you leave your car in this position there is a danger with tubeless tyres that the edges may be pressed sideways and release the air accidentally. If you are up against the kerb and there are cars parked in front and rear when you wish to move away, you may have difficulty in getting the car away from the kerb edge. (see page 22)
- (g) To judge your position from the kerb edge, move the car so that it is about 6 ins. away and parallel with the kerb edge and then from the driver's seat take a sighting position at the pavement a few yards ahead. It should be possible to sight the position of some object on the car (the mirror, bonnet or mudguard) against the kerb edge and thus provide a good guide in future.

PART 4 — DRIVING ON THE ROAD



Fig. 26. Good anticipation avoids accidents.

OBSERVATION

A skilful driver 'keeps his eyes open,' thinks ahead and observes many things to guide him in smooth, safe, progressive driving. The following are a few examples:

- (a) *Road surface.* Vary your speed, accelerating and braking according to the road surface. If the road is gravelly with loose surface or if there has just been a shower of rain on a dry, smooth road, skids are very likely.
- (b) *The vehicle in front.* Don't drive too close to the vehicle in front. The higher the speed the greater should be your distance. Don't get too close to large lorries; they often have very powerful vacuum brakes and can stop quicker than you can.
- (c) *Speed limit signs.* Keep your eyes open for built-up areas and reduce speed accordingly.
- (d) *Schools.* At appropriate times of the day keep your eyes open for school signs and the wardens helping children to cross the road.
- (e) *Observe the brake lights* of cars ahead. Be particularly careful if you find the car ahead has its brake lights out of order.
- (f) When passing a *line of stationary vehicles* slow down and give as much room as possible for car doors opening and people stepping out unexpectedly.
- (g) *Keep an eye on pedestrians* on the pavement, particularly youngsters playing games, as they may suddenly dash into the road. (*See above*).
- (h) *Cyclists* need to be given a good space, particularly if they are not too secure.
- (i) Glance frequently in your *mirror* to make sure you know what is behind you.

I am going to
TURN RIGHT
or MOVE OUT



I am going to
TURN LEFT
or PULL IN



I am going to
SLOW DOWN
or STOP



Fig 27. Only 3 hand signals are officially recognised.

SIGNALS

Observation and correct anticipation, proper positioning and speed control reduce the need for signals, but when they are given they must be given in ample time so that others can take the necessary avoiding action.

A learner driver is expected to know the three hand signals although, in practice, if a car is fitted with trafficators or 'winkers', hand signals are only used to confirm these where possible, except that a hand signal is the only signal to show you are about to slow down and stop.

Almost all cars are fitted with stop lights which are operated by the footbrake pedal and if these are working correctly they give an indication to the car behind that you are slowing down or stopping, but a hand signal given before you start to brake gives more warning.

The use of winkers allows both hands to be used for steering and controlling the car and in addition they can be seen more clearly at night than hand signals; they can also be seen from the rear nearside whereas a hand signal cannot.

To be of any use, signals must be given well in advance to show what you intend to do and not what you are doing. The fact that you give a signal does not entitle you to take any action; it is up to you to make sure that the action you propose is safe.

Remember, the signals you give are only to show what *you* intend to do and you must not signal to other people to take action. Flashing headlight signals, for example, can easily be misunderstood and have caused many accidents; they should only be used to give warning of approach.

HORN

This should be used only when necessary to inform others of your presence if they have not seen you or if they appear to be unaware of your presence because of wind noise or other conditions. Remember that it is illegal to sound your horn in built-up areas at night between 11.30 p.m. and 7 a.m., and when the car is stationary.

DRIVING TO A SYSTEM

Your drive along the road, whether in town or in country, consists of a succession of 'hazards' or situations which you have to tackle. Some of these may be caused by steep hills, bends in the road, crossroads, etc., all of which may be indicated by Ministry of Transport signs placed in the appropriate places; or they may arise because of other traffic and pedestrians on the road. Concentration and observation are essential to get early warnings of any hazard.

A sequence of driving drill is essential if you are to build up good habits and good driving, and the sequence of action can be summarised as follows:

1. *Observe* the hazard in good time and *decide* what course you wish to take.
2. *Look in the mirror* to see what traffic is behind you to make sure it is safe before you alter course, then give the appropriate signal and move into position.
- ✓ 3. When *slowing down* apply the footbrake steadily, not suddenly, until your speed is suitably reduced.
- ✓ 4. *Change down* into the correct gear for this speed.
5. *Look in the mirror* again and confirm the necessary signals to inform approaching and following traffic of your intention.

The purpose of practising this driving drill sequence is to make sure that you automatically, without inconveniencing other road users, place yourself:

- (a) In the *correct position* on the road for turning left or right etc.
- (b) Travelling at a *safe speed* for the conditions and your intentions.
- (c) In the *correct gear* for your intended actions.

Remember that it is your legal responsibility to make sure that your actions will not endanger or inconvenience other road users when you move off, reverse, change course, overtake, turn or stop.

The Highway Code advises drivers to keep well to the left of the road unless overtaking or about to turn to the right. The distance from the kerb will naturally depend upon the traffic conditions and the width of the road. A sensible distance from the nearside kerb is between 3 and 6 ft. depending on conditions. If there are road markings indicating 'lanes', you should not straddle the white lines but keep within a lane and take care not to move from one lane to another without first making sure it is safe to do so.

When driving through busy shopping centres change down to a lower gear and proceed more slowly. Keep your attention on the road and be prepared to stop quickly in an emergency.

Fig. 28. Correct driving drill for turning right.



(A&B) *Intention is to take the next turning on the right. Look in mirror, car immediately behind, allow this car to pass.*

(C) *Look in mirror, road now clear, give appropriate signal and move into position near centre of road, gradually slowing down.*

(Below: Views from an outside observer).



(D&E) *Change into suitable gear for this speed, signalling on the trafficator and gradually pull up near the centre of the road preparatory to turning right. Allow oncoming traffic to pass.*

(F) *Turn into the side road without cutting corner.*

TURNING RIGHT

This is one of the most dangerous operations in driving because you are obstructing traffic behind you and also crossing lines of traffic coming towards you.

Always apply your driving system, i.e., mirror, signal, mirror, slow down and change down, stopping if necessary.

TURNING RIGHT FROM MAIN TO SIDE ROAD

As you are in a main road your speed will probably be quite high, so signalling and manoeuvring must be done well in advance; the higher your speed the further in advance these operations should be done.

Apply your driving system (*see* page 29) to get to the offside lane as early as you can, ready to stop at the entrance to your turning. Fig. 28, page 30, shows the general principles of this manoeuvre.

If you observe the traffic approaching in the distance on the other side of the road it may be possible to time your arrival at the turning so that there is a gap in the oncoming traffic; if so you only need to slow down sufficiently to take the corner. If the road is not clear, stop near the middle of the road to allow following traffic to pass on your left without any obstruction. Halt facing the direction you were going and do not pull over into the line of facing traffic.

When the traffic ahead has cleared, turn into your side turning keeping well to the left and do not cut the corner.



Fig. 29. Advance indication of no right turn ahead.

In some large cities, right-hand turnings are gradually being eliminated to reduce delays in the traffic flow. In the situation shown in Fig. 29, if you wish to turn right you will have to take action to get into the left-hand lane as soon as you can, and the route will be indicated for you to take a turn round a block of buildings to cross your present course at a light-controlled crossing. This operation is not too easy when the traffic is heavy, but if you signal early enough it can be done with the co-operation of other drivers.

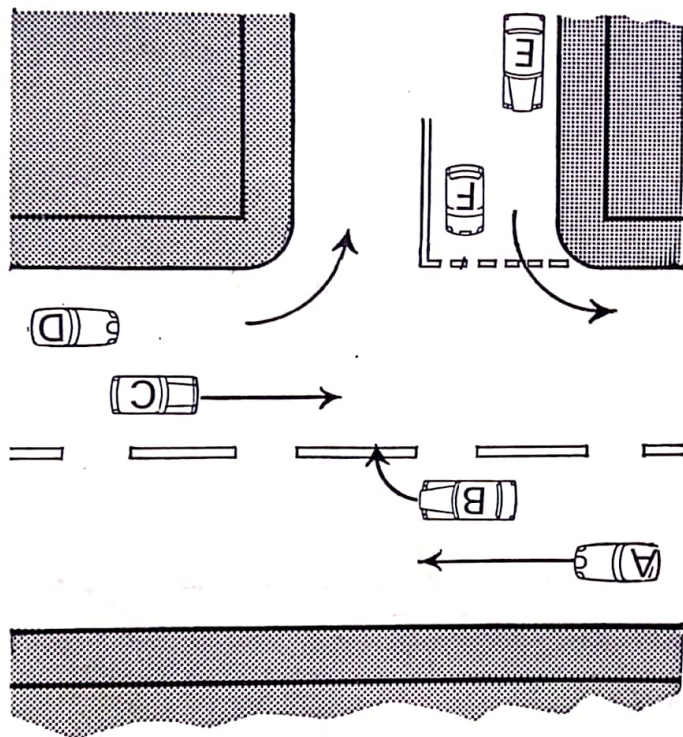


Fig. 30a. Correct positioning for turning right. Cars B and F have halted allowing cars A and D to proceed without obstruction. Car C has priority. Car E can proceed when car C has passed. Car B has priority over car F.

TURNING RIGHT FROM SIDE TO MAIN ROAD

The positioning of your car at the exit depends upon the width of the side road. If it is a 2- or 3-lane road keep well to the left; if it is a 4-lane road keep slightly to the left of centre, thus allowing traffic to pass you on your left if need be.

If you are turning out into a busy main road it is almost certain that you will have to stop and wait until the road is clear. Here distance and speed estimation, explained on page 46, will help you to decide the right time to move out.



Fig. 30b. View from car C which is in the main road and has priority; but must proceed with caution.

Fig. 30 a-d shows the situation. If you are in a side road, any traffic passing along the main road has right of way; traffic waiting in the centre of the road to turn right into your side road also has priority (unless for some reason the driver of the first car decides to allow you to pass first).

If there is no traffic waiting in the centre of the main road or if the first car gives you a clear signal to proceed, first look to the right and then to the left and decide on the following basis:

- (a) If there is traffic approaching from your right you must wait. It is dangerous to go out even if the car coming from your right is signalling to turn left, as the driver may have forgotten to

cancel his indicator, or he may be obscuring your view of other traffic proceeding straight on. Wait until the right-hand lane can be seen to be clear.

- (b) If the right-hand lane is clear look to the left. If there is only one line of traffic coming down a 4-lane road you can go out, pull into the centre of the road and filter into the line of traffic. If it is a single line of traffic on a 2-lane road or two lines of traffic in a 4-lane road you will have to wait until there is space to filter in.

As soon as you get into the line of traffic, accelerate as quickly as possible to the speed of the other traffic, thus causing a minimum of inconvenience to other drivers.



Fig. 30c. View of car B also in main road waiting to allow facing traffic, cars C and D, to pass.



Fig. 30d. View behind car F emerging from side road; must wait until main road is clear.

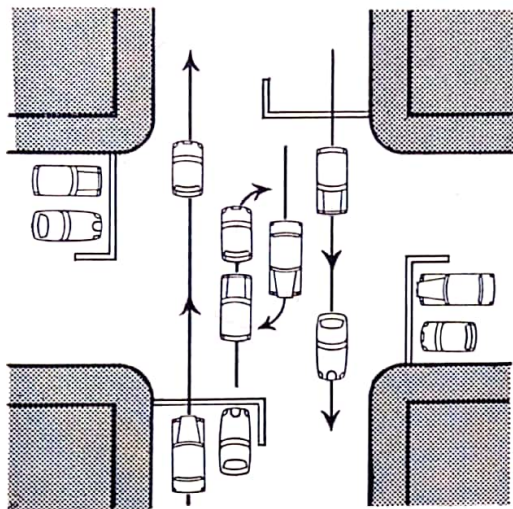
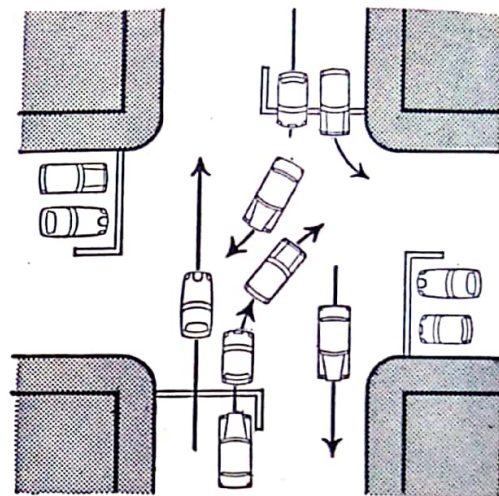


Fig. 31. Normal method of turning right at crossroads.

Fig. 32. Occasional method of turning right at crossroads. Extreme caution needed as view ahead is obstructed.



TURNING RIGHT AT A CROSSROADS

The procedure is the same as for turning out of a main road into a side road. If the crossing is wide enough the normal procedure is to pass to the left of any approaching car turning to his right (*see* Fig. 31, i.e., right-hand to right-hand).

Always remember that oncoming traffic has the right of way across the crossing and you must wait until the road is clear before turning right. Keep a sharp look out and give priority to pedestrians walking across the road you wish to enter.

There are occasions when the layout of the crossroads makes a right-hand to right-hand turn impracticable and in this case you would turn in front of facing traffic intending to turn to their right. In this situation (Fig. 32), extreme care is necessary, as the stationary vehicle obstructs your view.

Where road markings and signs indicate action other than that described above, these would of course be obeyed.

TURNING LEFT FROM MAIN TO SIDE ROAD

If you are in the offside lane of a double lane of traffic, look in the mirror, signal that you wish to get into the left-hand lane, slow down slightly, allow the first car on your left to pull away, and then watch for the next car to slow up sufficiently to allow you to get into the lane. (Remember this situation when you are in a more favourable position of being able to give way to someone else, and do so.)

Once you are in the left-hand lane, make sure that you give your left turn indication well in advance and gradually slow down, keeping well to the left. Select the correct gear before you get to the corner. Keep a sharp look out for cyclists between you and the kerb and allow them to draw ahead; cyclists keep to the near-side of the road whether going straight on or turning.

If pedestrians are walking across the end of the side road you must give them priority and then proceed when the road is clear.

TURNING LEFT FROM SIDE TO MAIN ROAD

When you are still some distance from your turning, look in the mirror, give the trafficator signal that you are intending turning left and gradually slow down.

Any parked cars must be passed before you pull over to the left; then slow down and change down into the appropriate gear for a dead slow exit.

Check in the mirror again and look to the side to make sure there is no cyclist on the inside between you and the kerb. When you get to the turning, take notice of advance signs and markings on the road.

If there is a double solid white line across the road you must stop and change into low gear, checking that the road is clear before proceeding. If there is a double or single broken white line across the end of the road you need not stop but must proceed cautiously so that you do not inconvenience traffic in the main road, having first changed into the correct gear for the turn.

When turning into very heavy traffic it may be necessary to wait quite a time until you can move out without causing inconvenience to other drivers. Don't allow yourself to be harried by traffic waiting behind you; it is up to you to decide when it is safe to proceed. Remember that the drivers behind cannot see as much of the main road as you can.

If the wait is likely to be a long one, the hand brake should be put on and the gear lever put into neutral. Also cancel the trafficator, as this can be quite annoying to a driver waiting in a car behind you, especially at night.

ROUNDAOBOUTS

A roundabout can be regarded either as an island in the centre of a crossing, or a very short one-way street, but all traffic on the roundabout must travel in a clock-wise direction and very good all round observation is necessary. Speed must be reduced and a lower gear engaged before entering a roundabout.

Traffic approaching a roundabout must give way to vehicles already on it, points of entry being marked by broken white lines on the road. Exceptional cases where the rule does not apply will be indicated by special road markings. Action can vary slightly depending upon the amount of traffic as follows:

(a) Very little traffic about.

Here you can take the shortest line whether you are going straight ahead or turning right. There is no need to stop at the entry line, but you must give way to any other traffic on the roundabout.

(b) Average traffic.

Your approach action here would depend upon the exit you intend to take, *see fig. 33a, b, c.*

(c) Rush hour traffic.

When there are double lines of traffic approaching the roundabout from all directions it is a matter of applying common sense and giving way as necessary to keep the traffic flowing.

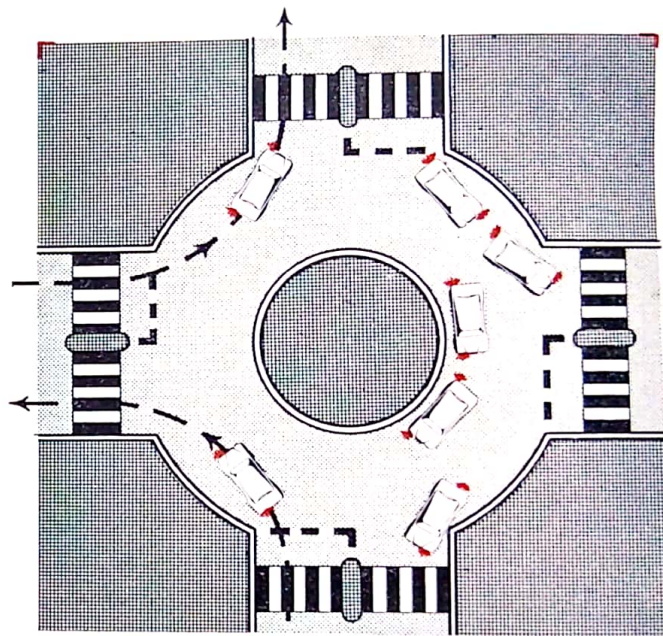


Fig. 33a. Turning left.

For *turning left*, apply the usual driving drill for turning left:- Look in the mirror, signal left, slow down, filter into any traffic on your left and approach the roundabout in the left hand lane. Stop at the line if necessary. Use the left turn indicator on approach and through the roundabout.

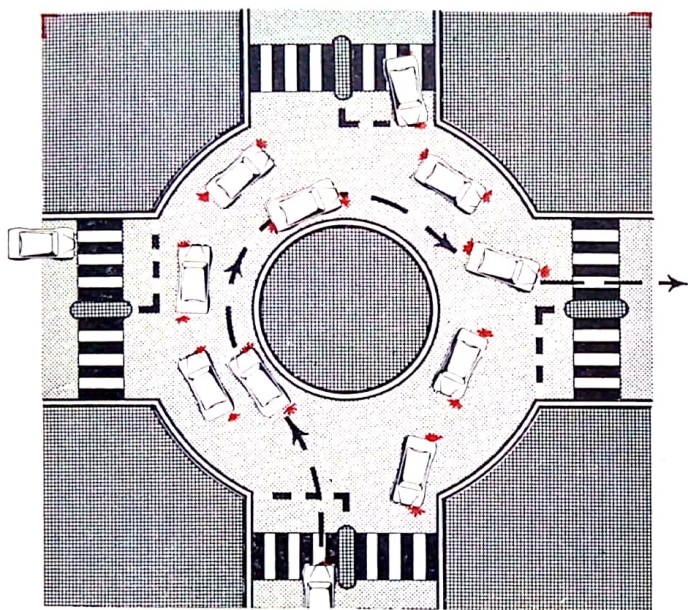


Fig. 33b. Turning right.

For turning right, apply the usual driving drill for turning right:- Look in the mirror, signal right, filter into any traffic on your right and then approach the roundabout, prepared to stop at the line if necessary. Use the right turn indicator on approach and whilst on the roundabout; change to left turn indicator as you pass the exit before the one you

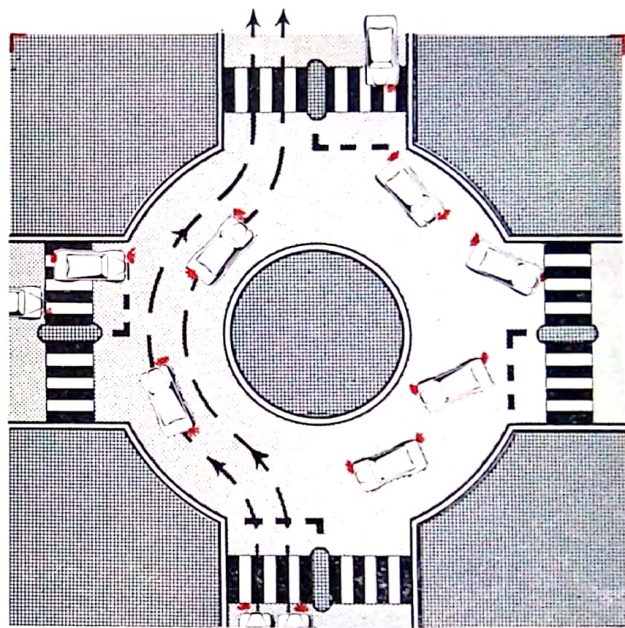


Fig. 33c. Going straight ahead.

intend taking. Watch out for pedestrians crossing the road.

When intending to go straight on it is not important whether you are in the left-hand or the right-hand lane, but keep to that lane on the roundabout; use the left turn indicator as you pass the exit, before the one you intend taking.



Fig. 34. Advance indication of one-way system.

ONE-WAY STREETS

There are many different one-way traffic systems but these are usually clearly signposted well in advance and you should be able to determine quite early which lane of traffic you want to be in. If you have any doubts about your proposed direction, you should select the middle lane of a 3-lane traffic flow, then you can go straight ahead; later you can turn right or left as desired and pick up your correct route.

The object of a one-way system is to keep the traffic flowing, so don't strike straight across from one side to the other; take a gradual course and 'drift' across, interlacing between other moving traffic. If you give a clear indication of your intention and give way to one car in front, then you can reasonably expect one car behind to give way to you (as you would do when in a similar position).



Fig. 35a (top). Incorrect entry into one-way system.

Fig. 35b (lower). Correct entry into one-way system.



In a one-way system you must expect traffic to pass you on either side and if you intend to change course you must look to make sure it is safe to do so.

Fig. 36. Part of Hyde Park Corner with very light traffic. Main lines of traffic interlace to take left or right turns at top of illustration.

LANE DISCIPLINE

Nowadays most main traffic routes, whether wide or narrow, are marked out into lanes to enable them to carry more traffic than if the traffic were allowed to run along haphazardly. Sometimes the routes are designated 'Clearways', when stopping is not allowed, and very often there are limited right-hand turnings so that you can be sure that the road is clear all the way.

Always drive within the lane marking you select and do not wander from one lane to another without giving a clear indication of your intention, checking in the mirror to make sure that it is safe to do so.

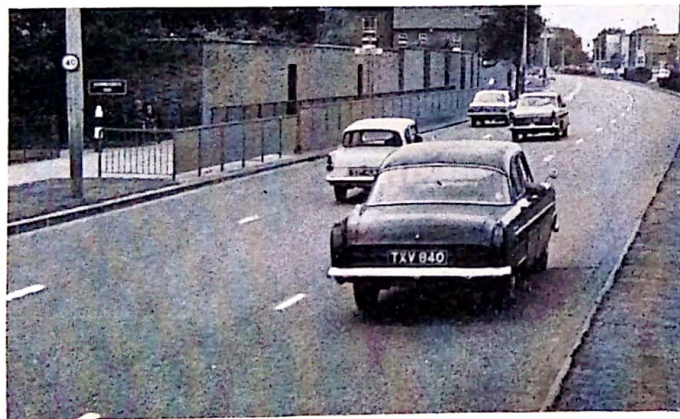


Fig. 37. Example of lane markings.

LOOK WELL AHEAD

To avoid unnecessary and sudden lane changes it is essential to look and think well ahead. Some examples are given below:-

On some main roads where two lanes are marked out, parking may be allowed and here, if you look well ahead, you can often move from the left-hand lane to the right-hand lane in good time to avoid a parked vehicle or an obstacle.

If you are following a bus, look ahead to see if there is a bus stop with intending passengers. If so you can position your car ready to overtake when the bus stops. Another observation point is the alighting passenger moving towards the bus stop; it gives warning that the bus will soon be stopping.

If the bus appears to have discharged its passengers and be just about to move off, then by slowing down slightly you could keep in the nearside lane with advantage.

Another example: if you look well ahead and see a car in the right-hand lane waiting to turn to the right, you can often move into the left-hand lane and so avoid being held up. However, if you look even further ahead on the other side of the road you may decide that the oncoming traffic will leave a gap for the halted vehicle to turn to the right long before you get there, and if so you can continue in the right-hand lane behind the car, slowing down just sufficiently to allow the car to turn right before you arrive there.

THE USE OF DIFFERENT GEARS

The gearbox enables you to select different speeds of engine relative to the road wheels. In low gear the engine speed is high compared with the road speed and this gives more power at the road wheels for starting off or going uphill. However, when the engine is accelerated to its maximum speed in low gear the car is travelling only slowly, so it is necessary to change into a higher gear where the ratio between the speed of the engine and the road wheels is greater. Each gear gives a different ratio between the engine speed and road wheel speed, whilst in top gear the engine is directly connected to the road wheels.

The accelerator, controlling the speed of the engine, also controls the speed of the car, but only within the range of the particular gear.

Operation of the clutch pedal enables the engine to be disconnected from the gearbox so that the gear change can be made without noise and also enables the engine to be smoothly connected to the wheels when starting.

Cars vary slightly, but you will probably find that from about 0-10 m.p.h. you should be in low gear; from about 5-28 m.p.h. in second gear; from about 10-45 m.p.h. in third gear and from about 20 m.p.h. upwards in top gear. (Some cars have an overdrive which is a higher gear still.)

It will be seen that the speeds in the various gears overlap—that is, you can drive along at 23 m.p.h. in either second, third or top as shown in Fig. 38. With most modern cars 20 m.p.h. is too low for top gear and

about 30 m.p.h. is the minimum for smooth running, although it is possible to travel at between 20 m.p.h. and 30 m.p.h. in top gear down a slight slope where no acceleration is necessary.

All modern cars are fitted with 'synchromesh' in the three top gears (but sometimes not between low and second gear) enabling the gear lever to be moved from one position to another (when the clutch pedal is pressed) without any sound of gears being engaged one with the other. It has been said that the advent of the synchromesh gear box has taken the skill out of car driving but this is not so; skill is still needed to keep the car moving smoothly along the road without any jerk forwards or backwards as the gear change is made.

To change gear smoothly it is necessary to learn the correct engine speed for the different gears at different road speeds. The way to practise this is given on page 43. The advantages of smooth gear changing are:—

- (a) It ensures the comfort of the passengers by not jerking the car.
- (b) It saves wear and tear on the clutch and tyres.
- (c) Most important, it enables you to change gear smoothly previous to any hazards you anticipate. This is the essence of good driving. For example, you are approaching a crossroads, but you know you can only cross at 20 m.p.h., and your present speed is 35 m.p.h. The inexperienced driver, although he knows he will need to be in third gear for the crossing, waits until the last moment and

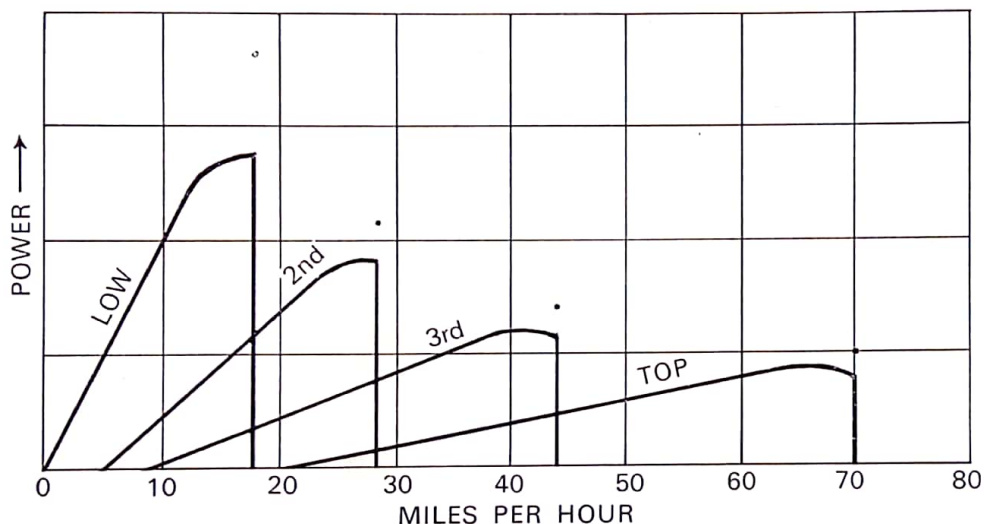


Fig. 38. Diagram comparing power available at different speeds in various gears.

then has to change gear whilst on the crossing. A skilful car driver will anticipate this crossroad and when 20 or 30 yards away will slow down, flip into third gear without any perceptible change in the car's motion and take the crossing at 20 m.p.h. in third gear. He will have much better control of the car and acceleration to speed away once the hazard has passed. He will also have both hands on the wheel and his attention on the road.

To use the diagram read off m.p.h. on bottom axis. Diagonal lines cut immediately above show power available in different gears. Take for example the speed of 23 m.p.h. Height to top gear line very small, indicating very little power available for acceleration. Height in third gear about three times that for top; height in second gear about 6 times height for top. This means that if you are moving along in top gear at 23 m.p.h. you change down to third and have three times the power; change down to second and you have six times the power.

You can see from the diagram, however, that the lower the gear the lower is the maximum speed. At 23 m.p.h. in second gear, maximum speed is reached at about 29 m.p.h., calling for a change up to third gear.

WHEN SHOULD YOU CHANGE DOWN?

When you have mastered the operation of changing down at high speed smoothly, use this to improve your car control. When in doubt, change down.

Anticipate hazards and slow down and change down into the correct gear as soon as it is convenient to do so; a safe distance is about 30 yds. before a hazard. This will enable you to give your full attention to steering the car, stopping if necessary, and will also give you greater control and acceleration once the hazard has been passed.

When approaching a steep hill descent, change to a lower gear and use the engine as a brake. This will give you a greater feeling of control and will also save wear on the brakes.

When going up a hill, instead of waiting until a lower gear becomes absolutely necessary, change down earlier to keep the engine running fast for more power. For example, change down from top to third at 35 m.p.h. instead of 25 m.p.h.

Depending on your actual speed at the time, you may find it advantageous before overtaking to change down into a lower gear to give you more power for acceleration and so reduce the time taken to pass. When in doubt change down.

Warning

Do not be tempted to change to a lower gear at a speed higher than the engine can accept or serious damage may result.

EXERCISE TO PRACTISE CHANGING DOWN

If you feel at all doubtful about changing down it is useful to practise this. All you need is a reasonably deserted stretch of road, preferably wide and as level as possible, and then proceed as follows.

Start the car up normally and change up into second gear, taking the speed up to about 20-23 m.p.h.

Now change up into third in the normal way and accelerate just sufficiently to keep the speed at about 23-25 m.p.h.

Keeping the accelerator pedal in exactly the same position, press the clutch and move the gear lever over into second and release the clutch gently. If you have the engine running at the right speed you can release the clutch quite quickly without any jerking at all.

Repeat this operation until you can do it without jerking the car; you will also get the feel of the position of the accelerator so that you can change up and down quite easily.

A similar operation can be done with the change from third to top at about 35 m.p.h. After a good deal of practice you should be able to do this from top to third at 40 m.p.h. without any difficulty, and third to second at about 20 m.p.h., depending on the car you are driving.

The whole object of the operation is to practise so that you can change down without any jerking of the car or sudden variation in the engine speed as the clutch is released in the lower gear.

SPEED AND STOPPING DISTANCES

In the Highway Code there are diagrams showing stopping distances for different speeds, but have you ever seriously applied these to your own driving? Extensive tests have shown that in good conditions, i.e., dry road, reasonable road surface and brakes correctly adjusted and in good condition, the stopping distance from 20 m.p.h. is about 13 yds.

If you were asked to estimate your stopping distance at 40 m.p.h. your quick answer would probably be 26 yds. i.e., twice the distance at 20 m.p.h.

And your guess at your stopping distance at 60 m.p.h. may probably be 39 yds., i.e., three times the distance at 20 m.p.h.

Now look at the table in Fig. 39 and see how far out you are. Obviously at speeds above 30 m.p.h. the stopping distance is extremely important, and unless you realise this and have a good estimation of distance you can find yourself involved in an accident, because no matter what you do you cannot stop in time.

One way of estimating distance is to measure it visually in car lengths which are easier to count than feet or yards; the average car is about 15 ft. long or 5 yds.

Check your distance estimation by pacing out your stopping distance for 40 m.p.h. which is about 40 yds. This is the distance you should be able to see clearly ahead and have a clear road ahead.

Fig. 40 shows cars at various distances away. Can you estimate these?

Car speed	mph	20	30	40	50	60	70
Thinking distance	yds.	7	10	13	17	20	23
Stopping distance	yds.	13	25	40	58	80	105

Fig. 39. Stopping distances at different speeds.

It is particularly important to observe the distance between your car and the car in front as your speeds increase from a temporary stop at a traffic light or crossing. As your speed increases so the distance between you and your car in front should increase and, incidentally, between you and the car behind.

It is also useful to test your brakes and this can be done on a stretch of deserted road (if you can find one). Place a mark of some kind at the side of the road, or select a lamp post or pillar box, run the car up at 40 m.p.h. and as you pass the selected mark apply the brakes as strongly as possible without skidding or locking the wheels. When you have stopped, measure the distance it has taken you to pull up and you will probably be quite surprised.



(a)



(b)



(c)

BRAKING

Look well ahead and you can anticipate having to stop or slow down. If you take action early you can then avoid last minute decisions and also reduce wear of tyres and risk of accidents. Brake early, firmly, but not violently.

You should let the brake pressure vary with the road surface. You can use firm braking on rough or dry surfaces but ease off and apply the brakes gently when it is wet or slippery. Remember that loose dust or gravel are almost as hazardous as grease. A half wet surface is more dangerous than one which is thoroughly wet, i.e., a shower of rain on a smooth road after the sun has been shining is twice as dangerous as a shower on a dull day.

A car well-loaded in the boot will slither about much less than one which is empty, so in slippery weather it is a good idea to have a tank full of petrol.

When approaching a curve, always slow down to a suitable speed *before* you get to the curve, and if the road is clear, gently accelerate round it. This makes an emergency stop much easier and also gives a better grip of the tyres on the road since acceleration has a more steadying effect on the car than braking has.

Avoid braking on a bend if you possibly can, as this can easily induce a skid.

In wet weather or after passing through shallow water, apply the brakes now and again, even when not required, to clear the brake drums of any water which would reduce their efficiency.

Fig. 40. Can you estimate how far ahead the cars are?
Answers page 61.

DISTANCE AND SPEED ESTIMATION

It might be said that this is something that you will have to gain by experience and this is true to a certain extent, but it does help to know the principles involved. On pages 45 and 47 we show cars at different distances and this is the first thing to practise—to judge distances, if only approximately. The next thing is to tie this up with your speed or the other car's speed. A useful figure to remember here is that at 30 m.p.h. you travel 44 ft. per second or 15 yds. per second, or about 3 car lengths.

Time is another very difficult thing to judge. How long is a second? Ask any of your friends to tell you when they think a half minute or a minute has passed and you will be surprised how far out they are. A rough guide is that your pulse speed is approximately one second, or another way of counting seconds is to count 'One thousand, Two thousand' etc., fairly slowly.

How does this help you when driving the car? Well, a quick estimation is invaluable when you are coming out of a side turning into a main road. All main roads nowadays are full of traffic and if you decide to wait until the road is clear in both directions you will certainly wait a long time. So you have to estimate how you can get out without inconveniencing other traffic. If you are stopped at the exit and know that you have perfect control of the car it will probably take you 2 seconds to get into the centre of the road. Therefore, if a car at the distance shown in Fig. 42 is travelling in a built-up area at 30 m.p.h. and is 30 yds. away, it will take 2

seconds to get to you. If the car is 60 yds. away it will take 4 seconds and thus you will have ample time to move out into the road before creating a dangerous situation.

If you are moving as you approach the road exit and can look quickly in each direction and estimate distance and speed quickly, you can move into the middle of the road in under 1 second because you are already moving. This is where quick and correct speed and distance estimation pays off.

Remember that during the time you take to decide, the approaching cars are reducing the distance and also reducing your time to act—a quick decision is imperative! If you have any doubts at all, hang back.



Fig. 41. How far away is this car? Would you be safe at this distance following it at (a) 30 mph, (b) 40 mph., (c) 50mph? Answers page 61.

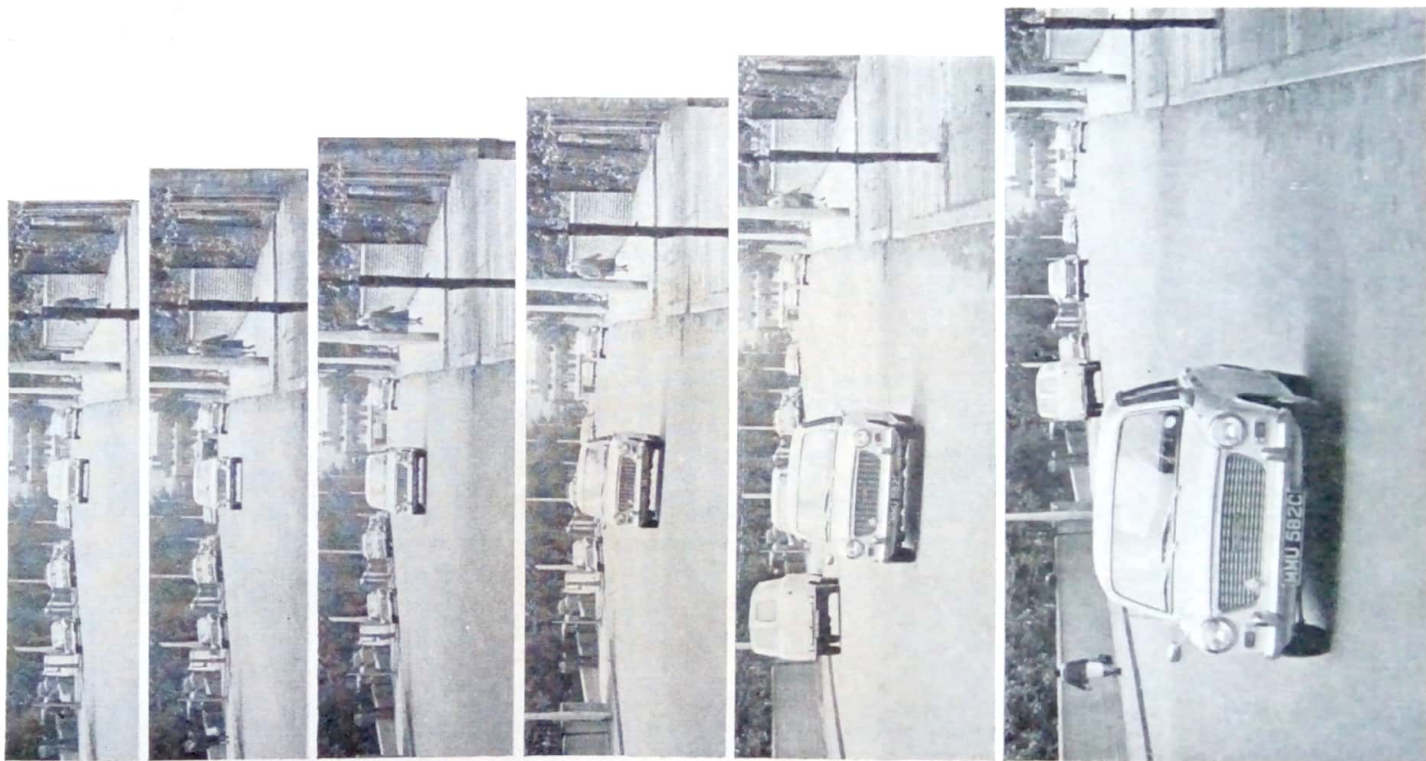


Fig. 42. This sequence of pictures gives you an idea of speed estimation. Look at the cars successively starting at the top picture and count "one thousand", "two thousand", etc., as you look from one car to the one below. This will give the appearance of a car approaching you at 30mph.

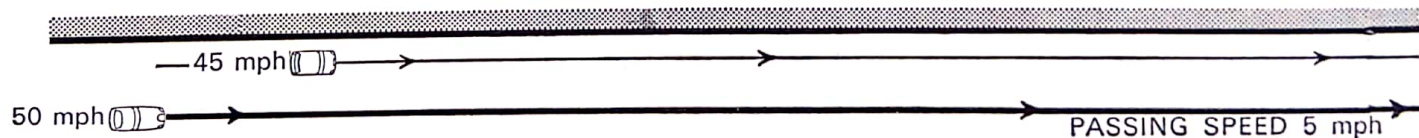
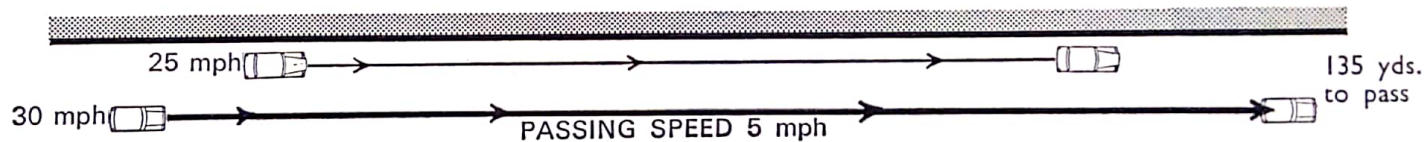
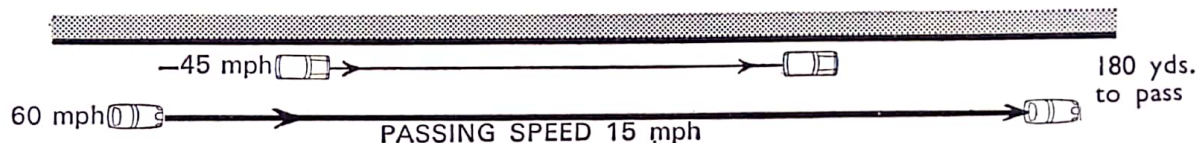
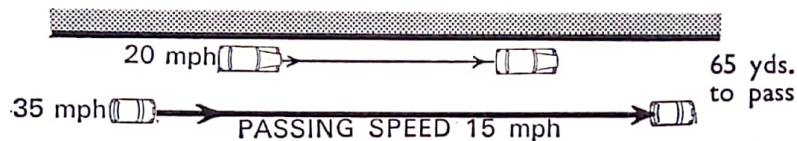


Fig. 43. Examples of distances taken to pass for different speeds and passing speeds. Distances approximate only. Distances behind the car to be overtaken have been estimated at $2\frac{1}{2}$ yds for every 10 mph, and distances in front to clear the overtaken car estimated at 5 yds for every 10 mph.

OVERTAKING

Beware of overtaking cars travelling at high speeds (over 40 m.p.h.) The reason for this is that the available time interval is much less at high speeds. In addition to this your vehicle performance is relatively poorer than at low speeds. Roughly 250 yards are travelled when a fast car overtakes another vehicle at 50 m.p.h. under ideal conditions.

Do not decide to overtake unless it is immediately clear that it is safe to do so. There should be no doubt in your mind, because doubt increases decision time and this is lost time; it may be disastrous if you decide to overtake too late.

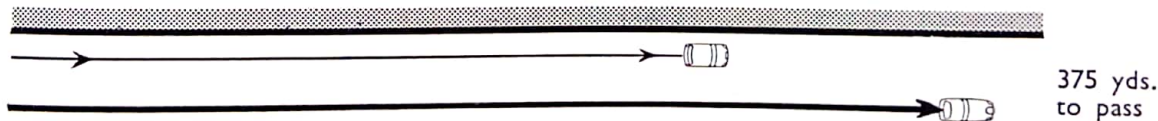
The time you will take to pass another vehicle will depend on the *difference* in your two speeds. It is important to know the acceleration of your car at various speeds, otherwise you may find your passing time too long. For example, if you are following a lorry travelling at 20 m.p.h. you know that by changing down to 3rd gear you can improve your acceleration and increase speed rapidly, possibly to 35 m.p.h.; this gives

a passing speed of 15 m.p.h. But if the vehicle ahead is doing 45 m.p.h. you have no advantage of a gear change to give you the brisk acceleration and you rely on the response of your engine at this speed; it would certainly take quite a time to increase your speed from 45 to 60 m.p.h. to give you the 15 m.p.h. passing speed and any less speed would increase your passing time considerably.

The examples given here show this quite clearly. In the first example your passing speed is 15 m.p.h. and it would take you 4 seconds to pass; during this time the vehicle you are passing will have travelled 36 yds. and it will take you 65 yds. to pass.

In the lower example, however, it would take you 15 seconds to pass and during that time, the other vehicle will have travelled 337 yds. and it will take you 375 yds. to pass; obviously not a very satisfactory situation, because oncoming traffic would have time to appear on the approach lane.

These examples show how important it is to have the acceleration and the power to pass a vehicle quickly. If you can raise only a 5 m.p.h. passing speed you should keep behind.



Figs. 40 a, b, c give you an idea of the appearance of vehicles at various distances. Very often when you are on the open road, by looking well ahead you can time your arrival at the vehicle to be overtaken so that you do not need to reduce speed at all and thus you have the advantage of much greater passing speed.

Before you overtake ensure that the road ahead is clear for a safe distance. Only if you can estimate the distance of approaching cars accurately and you know the acceleration of your own car at the various speeds can you come to a correct decision whether to overtake or not. If there is any doubt at all in your mind keep back.

Before passing, always give the proper signals so that traffic behind will know what you are going to do.

Never try to pass a car which is already passing another vehicle except on a three-lane dual carriageway or motorway.

Never follow a car passing another, but wait until you can see for yourself that the road ahead is clear; the driver in front may have estimated that he can just get past before the oncoming traffic is too near—you may be left facing it head-on.

Never overtake on corners or near road repairs or similar hazards and also remember you must not cross a white line in the middle of the road if the continuous line is at your side.

Care is needed when passing on a steep hill; you may find your power falling rapidly so that your passing speed becomes insufficient.

Don't get too close to a slower vehicle in front. Remember, the distance in good road conditions should be about one car length per 10 m.p.h. and the nearer you are to the rear of a larger vehicle the less you can see of the road in front. Figs. 44 and 45 show clearly the advantages of hanging back.

The correct hang back position will give you the following advantages:

- (a) You will have a margin of safety if the vehicle ahead should stop.
- (b) You can see any signal from the driver ahead.
- (c) There will be time to signal to any driver behind you.
- (d) The driver of any approaching vehicle can see you.
- (e) By gentle deviation you can see around either side of the vehicle ahead.
- (f) When you decide to pass, you have a distance in which to gain speed so that your passing speed is quite high.
- (g) It provides a margin of safety for any driver overtaking you in the wrong place.
- (h) Driver ahead can see you in his mirror.
- (i) On the crest of a hill you can obtain a view underneath the vehicle ahead.
- (j) When descending steep hills you can see over the top of the vehicle ahead.
- (k) Your windscreen will not be obscured by mud from the rear wheels of the vehicle ahead.

When you have decided to pass, give a short hoot to warn the vehicle ahead that you are overtaking and give as much clearance as possible as you pass.

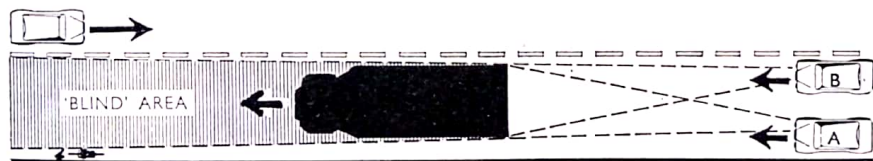
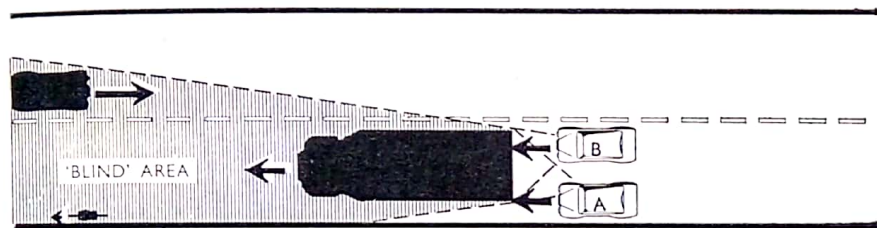


Fig. 44a (top). Car too close to lorry. Car driver cannot see cyclist from position B nor approaching car from position A. If he pulls out he risks a head-on collision.

Fig. 44b (lower). Car distance from lorry giving a more distant view of traffic at both sides. This also gives more distance in which to accelerate so that the actual overtaking time will be reduced. In position A, car driver can see obstructions a short distance in front of lorry, and by moving out to position B he can see oncoming traffic.



Fig. 45. Overtaking position showing the advantage of hanging back. Two viewpoints similar to those shown in diagrams 44a and b.

MOTORWAY DRIVING

The continuous high speeds on a motorway cause many cars to break down each year because they are not in perfect condition and something gives way under the strain.

Before you travel on a motorway it is advisable to check your car regarding the following points:

- (a) Examine the fan belt and have a new one fitted if it shows any signs of wear or fraying. A garage will fit you a new one in a few moments.
- (b) Top up the engine with oil and the radiator with water.
- (c) Test your brakes and make sure that they are working efficiently. If you have any doubts go to a garage and have them adjusted.
- (d) Make sure your tyres are inflated to the correct pressure and don't drive fast if you have any doubts about their condition.
- (e) Make sure you have enough petrol in the tank.
- (f) Check that your stop lights and trafficators are working properly.
- (g) Clean your windscreen and rear window carefully.
- (h) Check that your windscreen wipers are working properly with good blades and that the washers, if fitted are topped up with fluid.
- (i) Clean the driving mirror and wing mirrors and set them correctly.
- (j) Clean the lights.

At the entrance to the motorway there is a long run-in which enables you to gain speed to join the faster traffic already on the motorway without causing any inconvenience to other drivers. As soon as you enter this run-in, observe the traffic already approaching and time your entry so that you filter into a space between vehicles. If necessary, you can stop and wait for a bunch of traffic to pass, but do this at the start of the run-in and not at the far end.

When on the motorway keep within the lane markings and do not wander from lane to lane. On a 2-lane carriageway keep to the left-hand lane and on a 3-lane carriageway you may keep to the middle lane if the left-hand lane is occupied by slower moving vehicles. The right-hand lane is intended for overtaking only and in a 3-lane carriageway, heavy goods vehicles are not allowed in this lane.

As speeds are higher than on normal roads, it is important to remember to leave a wide space between you and the vehicle in front, approximately one car length per 10 m.p.h. in good conditions and a much larger space if the road is wet or icy. Lack of this spacing is the cause of many accidents.

When overtaking always look in your mirror to check on traffic approaching from behind you before moving from one lane to another, and remember that fast-moving vehicles come up very, very quickly. Always



A

MOTORWAY EXIT

Fig. 46a. All roads leading off a motorway are on the left hand side and have advance warning notices. Signal your intention to turn off and reduce speed in good time. $\frac{1}{2}$ mile at 60 mph = 30 seconds.



B

Fig. 46b. Do you know the meaning of the small sign at the roadside with 3 diagonal lines on it? Answer page 61. Now is the time to reduce speed still more.



C

Fig. 46c. Turn into the slip road as early as possible thus allowing a clear road to fast traffic behind you. Continue to slow down to 30 mph when in the slip road ready for the turning.

signal in plenty of time before pulling out and when you have overtaken do not move back into your lane too soon, otherwise you will be too close to the vehicle that you have just passed. Wait until you see the overtaken vehicle in your mirror before pulling in.

You should not overtake on the left.

If you see warning signs or flashing lights, slow down in good time and do not be tempted to overtake before you get to the obstruction.

If your car shows signs of breaking down or you have some other emergency, give as much time as you can for following traffic to pass and signal as clearly as you can before pulling over on to the left-hand side of the road on to the hard shoulder.

Do not run your car at its maximum speed for hour after hour. Choose a speed 10 or 15 m.p.h. below its maximum and you will find this will be much safer.

Driving for a long time at an even speed may cause you to feel drowsy. Open a window for fresh air, or if you feel sleepy stop at the next service area and have a short break.

In wet weather travel at a slower speed, as your windscreen will be obscured from time to time with muddy spray blown up from passing vehicles. This is when a windscreen washer is very handy.

If there is any tendency towards fog, drive very cautiously because although it may be clear where

you are, the fog can quickly form in patches, particularly in low-lying parts. Flashing foglamps on the motorway are now in operation to give you warning to slow down and drive slowly. Never be tempted to speed through fog, assuming that the road is clear, but slow down and keep your speed down to your visual distance. For example, for visibility of 40 yds. your speed should be 40 m.p.h. in good conditions; visibility 25 yds., speed 30 m.p.h. or less.

When you are about to leave the motorway you will find advance indication signs give you plenty of notice. As soon as you see the first sign you should pull into the left-hand lane, after giving the usual signals and observing the traffic following you, then gradually slow down, keeping in the left-hand lane until you reach the markers. If you gauge your speed properly you can reduce without braking very much. To do this you should have dropped your speed to about 40 m.p.h. by the time you reach the 100 yds. marking. Then move into the slip road and continue reducing speed, preparing your mind for normal traffic conditions and possibly a 30 m.p.h. limit.

Many accidents have been caused by high speeds after leaving the motorway. This is because drivers have difficulty in estimating their speeds accurately after travelling for a considerable time at a constant high speed. It is essential to watch your speedometer and keep your speed down to the normal traffic.

PART 5 — SPECIAL CONDITIONS

DRIVING IN THE RAIN

In heavy rain it is advisable to reduce speed to about half your normal, as it has been proved that at high speeds, particularly over 60 m.p.h., the tyres lose their grip on the road. This is particularly so if the tread is worn. Research has shown that if rain water is on the road to a thickness of a penny, up to 2 gallons has to be moved out of the way of each tyre each second before it can make contact with the road at 60 m.p.h. Almost all accidents in the wet involve skidding.

SKIDDING

A skid is caused when the grip between the tyres and the road is reduced by weather conditions, the condition of the road, or speed and change of direction; the wheels slide sideways instead of rolling in the forward direction.

There are a number of factors which contribute to skidding:

- (a) Excessive speed (allied to the following).
- (b) Slippery or loose road surfaces.
- (c) Rain, oil, ice on the road.
- (d) Braking too harshly on a bend or corner.

- (e) Badly adjusted brakes.
- (f) Badly worn tyres or uneven tyre pressures.
- (g) Road cambered in the wrong direction.

The best way to avoid skidding is by anticipating the conditions ahead and driving at the right speed. Practically all skidding can be due to unskilful car control, i.e. wrong use of brakes, steering, accelerator, or lack of observation.

REAR WHEEL SKID

This is the most usual and the back end of the car tends to drift sideways. You can feel this immediately and if you have had no experience, the natural reaction is to take your foot off the accelerator and apply the brakes. This must be avoided.

The correct procedure is to release the accelerator slightly (not sufficient to make the engine slow down the back wheels, otherwise this will make the rear wheels skid even more) and steer quickly but gently in the direction you are skidding. This will immediately bring the rear of the car again round into line. Be ready to straighten the steering wheel so that you do not skid in

the opposite direction. In fact as soon as you have taken the correcting action you should immediately turn the steering wheel back again, otherwise you are likely to get involved in a snake-like progress down the road.

Quick corrective action is needed because if you once get more than 20° off course it is too late to do any correction and you will probably end up facing in the wrong direction.

If you can possibly get practice on a skid pan this is well worthwhile.

FRONT WHEEL SKID

This is usually caused by taking a corner too fast and then applying the brakes. It is very difficult to control but the first action is to remove your foot from the brake. This will give the front wheels an opportunity of rotating and they will pick up your course again provided you have room to do it. To avoid this you should approach all corners with caution and slow down sufficiently beforehand to avoid braking on the corner, then accelerate gently round it.

FOUR WHEEL SKID

This is unusual but can occur in very wet weather when travelling at high speeds. The wheels lose all adhesion with the road and skate on the top of the water. Braking doesn't help but very quick dabbing on the brake may enable you to get a grip.

WINTER DRIVING

If you hope to make any progress on ice or thin snow you must have tyres with a good tread. Worn tyres cannot get a grip. With worn tyres it may sometimes help to reduce the pressure a little and so get more tread on to the road but this should only be done in an emergency. Another idea is to tie a piece of rope around the driving wheels in four positions. This needs to be a good strong clothes cord or similar and both driving wheels must be done, otherwise one wheel will still skid whilst the other remains stationary. Always drive in a gear or two higher than you would normally use, otherwise it is difficult to control the powerful acceleration of the driving wheels and this immediately breaks the grip on the road.

When driving on slippery roads it is a good idea to keep near to the centre of the road and thus allow yourself room for manoeuvre: if you are too near the left-hand side any skid will involve you in either drifting into the kerb or into some other obstacle.

Allow much more than the normal stopping distance between your car and any vehicle in front, particularly when travelling downhill.

Heavy falling snow is very difficult to see through and often begins to pack up on the windscreen, restricting the wipers and making visibility nil. It is useful to have an aerosol spray of de-icing fluid which can be

sprayed on the outside of the windscreen to thaw off any ice or rain freezing on it. Also have your demister working fully.

If you have to stop and clear the snow off your windscreen from time to time beware of traffic behind you and give plenty of warning.

On some cars with the bonnet opening at the rear, it is possible to release the bonnet catch and prop it open with a matchbox or duster so as to allow warm air from the engine to blow directly on to the windscreen.

Another useful emergency method of clearing a small area of ice off the windscreen is to press your hand on the inside and this will warm the glass after a short time and so clear a small area (you may have to warm your hand once or twice).

WINTER PRECAUTIONS

At the beginning of the winter season you should have your radiator filled with the correct proportion of anti-freeze solution. If you leave your car outside in all weathers you will need more anti-freeze, as the temperatures will be lower. Follow the maker's directions.

When leaving your car in the garage after driving in snow, leave the handbrake off, otherwise you may find it frozen on when you wish to move the car the next day. Also clear away any accumulation of snow under the back of the mudguards before putting the car in the garage, as this may drop off in the night and form a high pile of frozen snow, preventing you from driving out next day.

A cold engine puts a great strain on the starter motor and battery and you should make sure these are in good condition. It is helpful to press the clutch pedal when starting; this lessens the load on the starter. Also make sure you are using the correct grade of winter oil which is specially made to be fluid at low temperatures.

A blanket, rug, or a piece of sacking placed over the engine beneath the bonnet will prevent condensation on the metal parts, but remember to remove it before starting the engine.

When driving in wintry conditions choose main roads, as these are more likely to have been cleared, or they will be cleared to some extent by other traffic.

In slippery conditions you must have plenty of weight on the back wheels (for a rear wheel drive car) and if you have no passengers it is a good idea to put a sack of sand or cement or a heap of books or paper in the back to give added weight.

FOG DRIVING

Fog is the most difficult hazard that the motorist has to contend with. If you are driving where patches of fog are likely to be encountered, proceed with great caution and act on any advance notices put out by the police. Parked vehicles are a great danger and it is advisable to keep to the centre of the road, following the white line or cat's eyes, but beware of straddling the centre line, as an approaching vehicle may be doing the same.

If you have a passenger you can progress satisfactorily by following the kerb edge with his help, but the number of parked cars nowadays form a very serious hazard. For this reason don't park your car on a main road in fog.

In daylight, use dipped headlights and at night a fog lamp with a flat topped beam or a pencil beam is very useful for locating the edge of the road.

The fog particles will accumulate on the windscreen almost unnoticeably, and wipers and washers should be used to keep the windscreen clear.

If you are following another car and feel that he is not making satisfactory progress, remember that he is clearing the fog away for you; you also have his rear lights to guide you. Don't be tempted to try to pass on the assumption that you can make better progress. In very thick fog it is quite useful to follow a bus, as the driver has a better seating position and usually more light.

When on a dual carriageway don't be tempted to drive fast, assuming the road to be clear—it may not be.

Turning to the right in fog is a very hazardous procedure and should be avoided if at all possible. However, if there is considerable traffic passing on the other side of the road this tends to sweep the fog fairly clear and if there is a gap in the traffic you may manage to get through without mishap. Keep your headlamps full on and use your horn if it will help.

Make sure that your headlamp glasses are perfectly clean, otherwise this can diffuse the light from the lamps and make visibility even more difficult.

In very bad conditions if you have a passenger and a torch then sometimes you can get to your destination, if fairly near, by persuading the passenger to walk ahead while you follow him in low gear. Naturally progress is very slow. If you have to abandon your car and your journey altogether, make sure you get your car off the main road and make a note of exactly where you have left it.

If your car is left outside all night in foggy weather, the damp is likely to form condensation on the electrical equipment, which may make starting difficult. It is a good idea to put a large piece of blanket or rug over the engine under the bonnet to keep moisture away (don't forget to remove the rug before starting off next morning).

NIGHT DRIVING

At night you rely on your lights, so see that these are working correctly and also that your headlamps are correctly adjusted. Some local authorities insist on the use of dipped headlamps in town and regulations may be introduced soon.

Clean the windscreen and rear window and make sure they are free from smears so as to cut down reflections to a minimum.

Reduce internal illumination in the car to a minimum and dim the speedometer lighting if this is possible.

When on the road keep your sidelamps and headlamps clean, and in rainy weather it may be advisable to stop every so often to wipe the headlamps free of mud which greatly reduces their efficiency.

Remember to drive within the distance that you can see; this will depend upon the efficiency of your headlamps and if you have to dip them because of oncoming vehicles, slow down. Don't risk driving through the dark patch to the left of oncoming bright headlamps if you cannot see that it is clear. It is inadvisable to black out your headlamps when passing approaching vehicles but you should make sure you dip them in good time to avoid dazzling the driver ahead.

When you are closely following another vehicle always dip your headlamps to avoid dazzling the other driver through reflection in his driving mirror.

In the event of a breakdown at night, push your car off the road if this is at all possible, but in any case beware of obstructing the rear lights if you open the boot for tools, etc.

It is useful to carry a torch of some kind, and for use in an emergency, special lamps can be obtained with flashing red lights to warn oncoming traffic. There is also a red reflecting triangle which can be placed in the road some distance behind your car for the same purpose.

Driving in the rain at night is particularly difficult because the lights of approaching cars are reflected off the road surface; travel at a reasonable speed and avoid looking directly at approaching lights.

TOURING ABROAD

Before travelling on the Continent it is advisable to check your car carefully; prevention is better than cure and you may find it difficult to get spare parts and servicing. Take care of the following points:

- (a) See that your car is given a careful service, the oil changed and the gearbox oil and rear axle oil topped up. Make sure the shock absorbers are checked and the brakes adjusted and checked for wear.
- (b) Battery. This should be checked for bad connections and any corrosion removed. Also have it checked electrically and replaced if necessary.
- (c) It is advisable to fit a new set of spark plugs if they have been in use for more than 10,000 or 12,000 miles.
- (d) Renew the contact breaker points.
- (e) Check the fan belt and replace it if it is frayed or showing signs of wear.
- (f) If your car is fitted with headlamp bulbs with dipping filaments the headlamps should be fitted with a converter to dip them vertically or to the right-hand side instead of the left.
- (g) Worn tyres should be replaced and others examined carefully for embedded flints, etc.

USEFUL SPARES TO TAKE

If anything does go wrong it is useful to be prepared, and the following items are suggested:

- (a) Car instruction book.
- (b) 2 spark plugs of the correct type, which may be difficult to obtain.
- (c) Fan belt.
- (d) 2 windscreen wiper blades.
- (e) A set of lamp bulbs and fuses.
- (f) 4 tyre valve interiors.
- (g) A spare inner tube if you have tubed tyres or, if you have tubeless tyres, one or two of the simpler plug outfits.
- (h) A large roll of adhesive plaster or adhesive tape.
- (i) A coil of soft copper or packing case wire and a length of good strong twine.
- (j) A nylon towrope, if you can find room for it.
- (k) Some car dealers will make up an emergency kit of spare parts most likely to be required and if not used these can be returned and money refunded.
- (l) It is useful to be a member of the R.A.C. or A.A. and take advantage of their insurance services.

Customs regulations vary from country to country and when planning your tour you should list the countries you are going through and then make particular enquiries regarding the need for International Customs documents, etc.

The rule of the road is keep to the right and overtake on the left. On 2-lane roads always keep well to the right.

Many countries have a central double line system similar to that in this country and if the continuous line is on your side it must not be crossed.

One rule in France is that vehicles coming from the right have priority in the absence of signs stating otherwise. The exception is when approaching a main road: a driver must give way to traffic on the main road.

LOADING YOUR CAR

Keep the weight distributed as evenly as possible. If the boot is filled with heavy luggage then see that the heaviest adults sit in the front seat.

When using a roof rack, load it with the lightest or bulkiest things and don't pile them high, otherwise the wind resistance will put up your petrol consumption. The higher the load and the more weight on top of the car, the more difficult it will be to take corners safely.

When the car is fully loaded it is as well to adjust the beams of your headlights, as any extra weight on the rear will cause the beams to point upwards. Also increase the pressure in the tyres as indicated in your handbook.

Remember that a heavily loaded car will accelerate more slowly and be more difficult to stop. It will also behave differently on corners and it is as well to go slowly until you find out how it behaves.

ANSWERS TO QUESTIONS

Page 3. Fig. 1. A few of the hazards to be expected are as follows:

- (a) Traffic ahead may be stopping. Slow down, change down and keep a sharp look out.
- (b) Lorries may be pulling out of the building site across your track. Take care.
- (c) Lorries approaching may want to turn across your track to enter the site. Give way if necessary to release traffic held up.
- (d) There may be a partly filled in trench across the road. Drive slowly and keep a sharp look out.
- (e) Lorries from the site may drop clods of earth or other debris in the road. Keep clear and keep a sharp look out.
- ✓(f) Lorries often have double-tyred rear wheels which can temporarily hold stones or pieces of earth which may fly off as the lorry goes along. Keep clear.
- ✓(g) In wet weather clay or mud usually on the road makes it very slippery and skiddy. Don't get too near the traffic in front.
- (h) In wet weather traffic ahead may splash mud on to your windscreen. Do not get too near the traffic in front.

Page 19. Fig. 18. No. It means only that the road ahead is one-way, and you can turn right or left as you wish.

Page 19. Fig. 19. Top row (signs in circles give orders). No overtaking; give priority to vehicles in opposite direction; all vehicles prohibited; all motor vehicles prohibited.

Lower row (signs in triangles give warnings). Two-way traffic ahead; dual carriageway ends; crossroads; uneven road; two-way traffic crosses one-way road.

Page 45. Fig. 40. 60, 40, 20 yards.

Page 46. Fig. 41. 13 yards away—your stopping distance at 20 mph.

- (a) A little too near.
- (b) No. This is your "thinking distance" at 40 mph.
- (c) Suicidal.

Page 53. Fig. 46(b). The first of the three "count down" markers before exit road from motorway. Each bar represents 100 yds.

DOUBLE DE-CLUTCHING

In principle this is quite a simple operation although it needs plenty of practice to do it well. There is only one addition to the sequence of events described for the normal gear change; this is the acceleration of the engine

with the gear lever in neutral and the clutch pedal released. This is done in the middle of the gear change when the gear lever passes through the neutral position. To change from second gear to low gear at a speed of about 5 m.p.h., the full sequence is as follows:

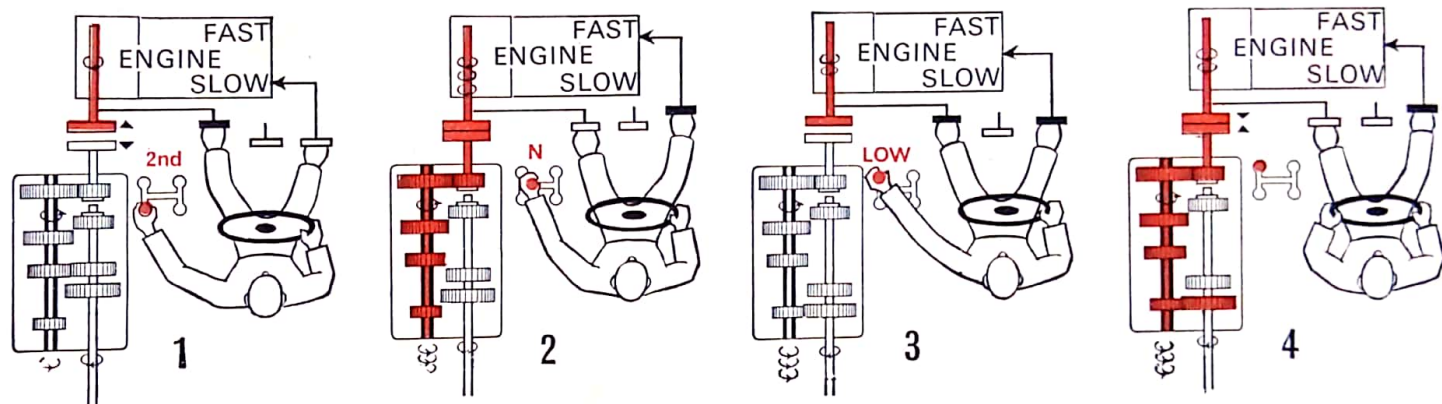


Fig. 48. Diagrammatic explanation of double de-clutching.

1. Simultaneously press clutch pedal release accelerator pedal move gear lever into neutral.

2. Release clutch pedal press accelerator pedal to increase engine speed (this also speeds up counter shaft in gear box).

3. Simultaneously press clutch pedal keep accelerator pedal partly pressed move gear lever into low gear.

4. Release clutch and continue accelerating as needed.

ACCIDENTS AND FIRST AID

If you are involved in an accident: — STOP and pull to the side of the road if possible.

1. If anyone is injured call, or ask someone to call, an ambulance as quickly as possible, giving a very clear description of the location of the accident so that the ambulance can find it quickly.
2. If the accident has happened on a dangerous part of the road, or at night, position someone back along the road to prevent other vehicles running into the first accident.
3. Take names and addresses of any witnesses and the registration numbers of other cars involved.
4. Give your own and vehicle owner's name and address and the registration number and make of car to anyone having grounds for requiring them, and obtain the same information from other parties involved.
5. If the above information is not exchanged, report the accident to the police as soon as possible and in any case within 24 hours.
6. Take the following details of the accident:
 - (a) Date and time.
 - (b) Place and position in road.
 - (c) Name and address of insurance company.
 - (d) Name and address of any independent witnesses.
 - (e) Road and weather conditions and visibility.
 - (f) Name and number of police constable if present.
7. Anyone seriously injured is best left until the ambulance arrives, otherwise you may do more harm than good. However, if bleeding profusely, attempt to stop this:
 - (a) Raise the affected part.
 - (b) Place a dressing, clean cloth or unused handkerchief firmly over the injury.

It is handy to have a first aid kit in the car even if it only contains a few simple items—bandages, adhesive dressings, cotton wool and a few safety pins.
8. A fire extinguisher is handy in an emergency but must be very easily accessible.

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Published by

E. P. PUBLISHING CO., LTD.

for

EDUCATIONAL PRODUCTIONS LIMITED

17 Denbigh Street, London, S.W.1.

in collaboration with

THE ROYAL AUTOMOBILE CLUB

Ball Mall, London, S.W.1.

First Edition 1968

Total copies printed 43,500

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